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ARCADIS
6723 Towpath Road
P O Box 66
Syracuse
New York 13214-0066
Tel 315 446 9120
Fax 315 449 0017
www.arcadis-us.com

ENVIRONMENT

Mr. Keith M. Krawczyk
Project Coordinator
MDEQ-RRD-Superfund
Constitution Hall – 3rd Floor South
525 West Allegan Street
Lansing, Michigan 48909-7926

Subject:
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit 3
Sampling Plan for Pore Water Collection System Outfalls

Date:
March 20, 2012

Contact:
Patrick McGuire

Phone:
315.671.9233

Email:
pat.mcguire@arcadis-us.com

Our ref:
B0064583.0003.00907

Dear Mr. Krawczyk:

On behalf of Georgia-Pacific LLC (Georgia-Pacific), ARCADIS has prepared this *Sampling Plan for Pore Water Collection System Outfalls* (Sampling Plan) to establish procedures for proposed pore water outfall sampling at the King Highway Landfill (KHL) of the King Highway Landfill Operable Unit 3 (KHL OU) located in Kalamazoo, Michigan.

During rainfall events, water infiltrates through the vegetative and drainage/barrier protection layers of the KHL final cover system and encounters the 40-mil linear low-density polyethylene (LLDPE) flexible membrane liner (FML). The water then runs along the top of the FML and is collected by the pore water collection system (perforated high density polyethylene [HDPE] piping) that is located at the toe of the final cover system along the southern, western, and northern boundaries of the KHL (see Figure 1). The southern pore water outlet pipe discharges pore water through a riprap spillway into a detention basin along the southwestern portion of the property, while the northern pore water outlet pipe discharges directly to a riprap apron that drains to the Kalamazoo River. The pore water collection system promotes drainage from the soils in the final cover system to maintain the stability of the soil cover over the FML by collecting and conveying water to outlets.

During construction of the landfill and since construction of the final cover system, Georgia-Pacific and the Michigan Department of Environmental Quality (MDEQ) have observed an orange-red color in the pore water at the outfalls – this discoloration has been attributed to the oxidation of iron from iron oxides in the drainage/barrier protection layer. However, no pore water sampling has been performed to date to confirm this assumption. As such, Georgia-Pacific is proposing to conduct pore water sampling at the KHL to identify the origin of the orange-red stains that have been observed at the pore water outfalls.

To support development of a pore water sampling plan, the pertinent details of the construction and composition of the final cover system are summarized below, along with the results of relevant historical analytical testing of the vegetative and drainage/barrier protection layers, a brief review of the characteristics of soils native to the Kalamazoo area, and the previous groundwater sampling analytical results for iron. This document is organized as follows:

1. Final cover system components and prior sampling results
2. Characterization of native soils
3. Previous groundwater analytical data results
4. Sampling plan for pore water collection system outfalls
5. Schedule and reporting

These items are discussed in further detail below.

1. Final Cover System Components and Prior Sampling Results

As previously indicated, pore water at the KHL OU percolates through the vegetative and drainage/barrier protection layers until it reaches the top of the FML installed during the cleanup and closure activities at the OU (ARCADIS 2012). The vegetative layer is comprised of approximately 6 inches of topsoil and the drainage/barrier protection layer is approximately 24 inches of imported sand fill. Refer to Figure 2 for a representative cross-section of the final cover system at the KHL OU.

As part of the design and construction of the final cover system, aggregates were sampled and analyzed by accredited laboratories. In 1998, the topsoil and sand fill from Balkema Sand & Gravel used for construction of the final cover system were certified by Aggregate Resources, Inc., to be virgin, native materials and free from contaminants. The certification of aggregates from Aggregate Resources, Inc. has been included as Attachment 1 to this letter. The topsoil and sand fill used for the vegetative and drainage/barrier protection layers were analyzed by Western Michigan Environmental Services, Inc., for chemical constituents identified in the letters from RMT, Inc. to Blasland, Bouck, & Lee, Inc. dated November 11, 1998 (Bailey 1998) (included in Attachment 2).

Prior to placement of the topsoil and sand fill, the materials were sampled and analyzed for a range of targeted constituents as identified in the November 11, 1998 RMT letters. The letters indicate that the results for volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), phenol, and 4-methylphenol, were all below detection limits, and that metals were detected at levels less than the criteria in place at the time. However, none of the aggregate samples were analyzed for iron.

2. Characterization of Native Sands

Georgia-Pacific's assertion that the orange-red stains at the pore water outfalls are caused by iron-rich sands is supported by several other reputable organizations. A study by the United States Department of Agriculture (USDA) states that sands in the vicinity of Kalamazoo River "are slightly stained by iron, which has imparted to the soil a yellowish tinge" (USDA 1901). On the Kalamazoo County Government website, iron is described as "the primary coloring agent of soil in the state of Michigan and in aerobic soil environments it is usually yellow, red or brown" (KalCounty.com 2012). Additionally, Terra Contracting, LLC (Terra), the contractor performing quarterly inspections and maintenance of the KHL on behalf of Georgia-Pacific, has confirmed that the observation of orange-red staining in sands sourced from local quarries is a common occurrence. Terra has also confirmed that after periods of rain, water that collects in the pore water detention basin along the southern side of the OU adjacent to King Highway also appears to be stained a reddish-orange color.

The 2005 Michigan Background Soil Survey (MBSS; MDEQ 2005) presents a compilation of soil sampling data that represents what is assumed to be the naturally occurring background concentration of metals in Michigan soils. The MBSS was originally compiled in 1991 and was updated by MDEQ in 2005 to include additional soil sampling data. The soil samples were divided into general soil types, including topsoil, clay, sand and silt, and sand. Statistical analyses were performed for each metal, including the percentage of non-detect values, as well as the mean, median, standard deviations, quantiles, and the range of concentrations for a metal. The metal data for each soil type is also broken down by geographical location, using glacial geology distinctions. Kalamazoo is located within the Michigan glacial lobe. Table 2 of the MBSS provides the metal concentrations detected in 38 samples collected from topsoil within the Michigan glacial lobe area. The statistical analyses of the 38 topsoil samples included in Table 2 indicate that the mean iron concentration is 2,432,000 µg/L with a standard deviation of 1,910 µg/L. Table 3 of the MBSS provides the metal concentrations detected in 17 samples collected from sand within the Michigan glacial lobe area. The statistical analyses of the 17 sand samples included in Table 3 indicate that the mean iron concentration 3,418,000 µg/L with a standard deviation of 1,880 µg/L.

3. Previous Groundwater Analytical Data Results

Groundwater samples collected from existing monitoring wells MW-1AR, MW-2, MW-3A, MW-7, MW-8AR, MW-8BR, MW-11RR, MW-12AR, MW-12B, MW-13AR, MW-13B, MW-14AR, MW-15AR, MW-16A, and MW-16B during the past eight years of groundwater sampling have been analyzed for iron concentrations (well locations are shown on Figure 1). The validated analytical data results for iron concentrations from

January 2003 through November 2010 are included in Table 2. The summary table of iron concentrations indicates that the maximum iron concentration detected at the 15 groundwater monitoring wells over the 8-year period was 174,000 micrograms per liter (µg/L), and the average iron concentration over that same time period was 22,545 µg/L. Since there is no generic groundwater-surface water interface (GSI) criterion or site-specific water quality-based effluent limit (WQBEL) for iron, the results of the groundwater sampling were compared to the groundwater contact criterion and risk-based screening level of 58,000,000 µg/L for iron from MDEQ's Part 201 Generic Cleanup Criteria (MDEQ 2011). The iron concentrations that have been detected in the groundwater at the KHL OU are significantly lower that the MDEQ's Part 201 Generic Cleanup Criteria.

In addition, when the groundwater maximum and average iron concentrations are compared to the topsoil and sand background iron concentrations for the state of Michigan, the groundwater concentrations are well below the background iron concentrations measured in the topsoil and sand throughout Michigan.

4. Sampling Plan for Pore Water Collection System Outfalls

The objective of the sampling activities is to identify the origin of the orange-red stains at the pore water outfalls at the KHL. To identify the constituent(s) that cause staining at the pore water outfalls, Georgia-Pacific proposes to collect samples from both the north and south pore water outfalls during wet weather conditions. ARCADIS personnel will collect one grab sample at each of the pore water outfalls shown on Figure 1. The water samples will be obtained by slowly submerging the sample jar within the flow from the pore water outfall such that no sediment is disturbed on the bottom of the outfall during collection. ARCADIS will measure temperature, turbidity, dissolved oxygen (DO), redox, and, pH in the field, and then each sample will be sent to KAR Laboratories, Inc. located at 4425 Manchester Road in Kalamazoo, Michigan for analysis of total dissolved iron. Measurements at each sample location will be recorded on an appropriate sampling log sheet and/or field book along with other pertinent information (weather conditions, visual observations of the conditions at the pore water outfalls, etc.).

All sampling activities will be carried out in accordance with the *Multi-Area Quality Assurance Project Plan for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site* (Multi-Area QAPP; ARCADIS 2010), the *Multi-Area Field Sampling Plan for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site* (Multi-Area FSP) and relevant addenda (ARCADIS BBL 2007a), and the *Multi-Area Health and Safety Plan for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site* (Multi-Area HSP) and relevant addenda (ARCADIS BBL 2007b).

5. Schedule and Reporting

Upon MDEQ approval of this Sampling Plan, ARCADIS and Georgia-Pacific will schedule the pore water sampling within approximately three months from the date of this letter, depending on precipitation events. The analytical data received from the laboratory will be validated prior to evaluation of the data. As stated above, since there is no generic GSI criterion or site-specific WQBEL for iron, the results of the sampling will be compared to the groundwater contact criterion and risk-based screening level of 58,000,000 µg/L for iron. Sampling results will be analyzed to determine if orange-red stains at the pore water outfalls are caused by the iron-rich soil within the final cover system or if additional sampling is needed to determine the origin of the staining.

The validated laboratory analytical data and a summary letter presenting the results of sampling activities will be submitted to MDEQ within 60 days after receiving the laboratory data.

If you have any questions, please do not hesitate to contact me.

Sincerely,

ARCADIS

Patrick McGuire
Principal Environmental Engineer

Copies:
Daria Devantier, MDEQ
Judith Alfano, MDEQ
Michael Berkoff, USEPA Region 5
Garry Griffith, P.E., Georgia-Pacific
Dawn Penniman, P.E., ARCADIS

Enclosures:

Table 1:	Post-Remediation Groundwater Sampling Results for Iron
Figure 1:	Pore Water Outfall Sampling Locations
Figure 2:	Final Cover System Cross-Section Detail
Attachment 1:	Certificate of Aggregates from Aggregate Resources, Inc.
Attachment 2:	November 11, 1998 RMT, Inc. Letter to Blasland, Bouck, & Lee

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Table

Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit

Table 1 - Post-Remediation Groundwater Sampling Analytical Results for Iron

Sample ID:		H85090	H85091	H85092	H85093	H85094	H85095	H85096	H85097	H85098	H85099	H85100	H85101	H85102	H85103	H85104	H85105
Well ID:		MW-14AR	MW-15AR	MW-11RR	MW-16A	DUP [MW-12AR]	MW-12AR	MW-12B	MW-8AR	DUP [MW-8AR]	MW-3AR	MW-1AR	MW-8BR	MW-13AR	MW-13B	MW-16B	MW-7
Date Collected:	Units	01/06/03	01/06/03	01/07/03	01/07/03	01/07/03	01/07/03	01/08/03	01/08/03	01/08/03	01/08/03	01/08/03	01/08/03	01/09/03	01/09/03	01/09/03	01/09/03
Metals																	
Iron	µg/L	11,200	11,300	5,900	9,960	47,200	48,600	6,290	14,900	15,600	49,100	21,100	10,100	18,500	7,130	9,420	6,260

Sample ID:		H85106	H85107	H85108	H85109	H85110	H85111	H85112	H85113	H85114	H85116	H85117	H85118	H85119	H85120	H85121	H85122
Well ID:		MW-1AR	MW-7	MW-2R	MW-11RR	MW-16A	MW-16B	MW-12B	MW-12AR	DUP [MW-12AR]	MW-13B	MW-13AR	MW-8BR	MW-8AR	DUP [MW-8AR]	MW-14AR	MW-15AR
Date Collected:	Units	05/05/03	05/06/03	05/06/03	05/07/03	05/07/03	05/09/03	05/08/03	05/08/03	05/08/03	05/08/03	05/09/03	05/09/03	05/12/03	05/12/03	05/12/03	05/12/03
Metals																	
Iron	µg/L	28,900	2,250	11,300	5,800	10,300	9,310	5,200	43,100	41,800	6,190	32,600	9,970	26,200	24,400	10,000	11,200

Sample ID:		H85123	H85124	H85125	H85126	H85127	H85129	H85130	H85131	H85132	H85133	H85134	H85135	H85136	H85137	H85138	H85139
Well ID:		MW-3AR	MW-7	MW-2R	MW-1AR	MW-11RR	MW-16A	MW-16B	MW-12B	MW-12AR	DUP [MW-12AR]	MW-13B	MW-13AR	MW-8BR	MW-8AR	DUP [MW-8AR]	MW-14AR
Date Collected:	Units	05/12/03	08/12/03	08/12/03	08/12/03	08/13/03	08/13/03	08/13/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	08/15/03
Metals																	
Iron	µg/L	29,500	2,780 J	9,770 J	46,700 J	5,430 J	9,200 J	8,570 J	5,170	47,100	45,600	7,860	33,600	10,800	23,100	24,400	10,400

Sample ID:		H85140	H85141	H85142	H85143	H85144	H85145	H85146	H85148	H85149	H85150	H85151	H85152	H85153	H85154	H85155	H85156
Well ID:		MW-15AR	MW-3AR	MW-2R	MW-7	MW-1AR	MW-11RR	MW-12B	MW-12AR	DUP [MW-12AR]	MW-13B	MW-8BR	MW-13AR	MW-8AR	DUP [MW-8AR]	MW-16B	MW-16A
Date Collected:	Units	08/15/03	08/15/03	11/03/03	11/04/03	11/04/03	11/05/03	11/05/03	11/05/03	11/05/03	11/06/03	11/06/03	11/06/03	11/06/03	11/06/03	11/07/03	11/07/03
Metals																	
Iron	µg/L	10,300	12,800	9,210	2,830	36,000	4,190	5,040	41,600	40,600	5,410	9,110	32,700	49,100	49,400	8,450	9,540

Sample ID:		H85157	H85158	H85159	H85160	H85161	H85162	H85163	H85164	H85166	H85167	H85168	H85169	H85170	H85171	H85172	H85173
Well ID:		MW-14AR	MW-15AR	MW-3AR	MW-7	MW-2R	MW-1AR	MW-11RR	MW-16A	MW-16B	MW-12B	MW-12AR	MW-13B	MW-13AR	MW-8BR	MW-8AR	DUP [MW-8AR]
Date Collected:	Units	11/10/03	11/10/03	11/10/03	02/23/04	02/24/04	02/24/04	02/24/04	02/24/04	02/25/04	02/25/04	02/26/04	02/26/04	02/26/04	02/26/04	02/27/04	02/27/04
Metals																	
Iron	µg/L	10,400	10,400	174,000	3,040	7,560	46,200	4,560	10,500	8,890	4,910	38,400	6,000	48,500	10,300	33,000	32,800

Sample ID:		H85174	H85175	H85176	H85177	H85178	H85179	H85180	H85181	H85182	H85183	H85184	H85186	H85187	H85188	H85189	H85190
Well ID:		MW-14AR	MW-15AR	DUP [MW-15AR]	MW-3AR	MW-7	MW-1AR	MW-2R	MW-16A	MW-11RR	MW-12AR	MW-16B	MW-8BR	MW-8AR	DUP [MW-8AR]	MW-13AR	MW-13B
Date Collected:	Units	02/27/04	03/01/04	03/01/04	03/01/04	05/17/04	05/18/04	05/18/04	05/18/04	05/18/04	05/19/04	05/19/04	05/20/04	05/20/04	05/20/04	05/20/04	05/20/04
Metals																	
Iron	µg/L	10,500	10,100	9,880	106,000	2,150	75,600	7,250	10,500	4,660	35,800	8,820	11,200	32,300	31,800	52,500	7,290

Sample ID:		H85191	H85192	H85193	H85194	H85195	H85196	H85197	H85198	H85199	H85200	H85201	H85202	H85203	H85204	H85205	H85206
Well ID:		MW-14AR	MW-12B	MW-15AR	DUP [MW-15AR]	MW-3AR	MW-7	MW-1AR	MW-2R	MW-11RR	MW-16A	MW-16B	MW-12AR	MW-12B	MW-13AR	MW-13B	MW-8BR
Date Collected:	Units	05/20/04	05/20/04	05/21/04	05/21/04	05/21/04	08/02/04	08/02/04	08/03/04	08/03/04	08/03/04	08/03/04	08/04/04	08/04/04	08/04/04	08/04/04	08/05/04
Metals																	
Iron	µg/L	9,990	4,600	10,000	11,400	100,000	3,150	75,400	8,510	4,810	10,600	8,560	36,000	5,160	62,300	7,990	11,400

See Notes on Page 5.

Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit

Table 1 - Post-Remediation Groundwater Sampling Analytical Results for Iron

Sample ID:		H85207	H85208	H85209	H85210	H85211	H85212	H85214	H85215	H85216	H85217	H85218	H85219	H85220	H85221	H85222	H85223
Well ID:		MW-8AR	DUP [MW-8AR]	MW-14AR	MW-3AR	MW-15AR	DUP [MW-15AR]	MW-7	MW-1AR	MW-2R	MW-11RR	MW-16A	MW-16B	MW-12B	MW-12AR	MW-13B	MW-13AR
Date Collected:	Units	08/05/04	08/05/04	08/05/04	08/06/04	08/06/04	08/06/04	11/15/04	11/15/04	11/16/04	11/16/04	11/16/04	11/16/04	11/16/04	11/17/04	11/17/04	11/17/04
Metals																	
Iron	µg/L	23,500	22,500	10,000	31,600	10,100	9,700	3,020	45,700	6,490	4,340	10,200	7,850	5,160	37,200	8,380	60,800

Sample ID:		H85224	H85225	H85226	H85227	H85228	H85229	H85230	H85232	H85233	H85234	H85235	H85237	H85238	H85239	H85240	H85241
Well ID:		MW-8BR	MW-8AR	DUP [MW-8AR]	MW-15AR	DUP [MW-15AR]	MW-14AR	MW-3AR	MW-2R	MW-7	MW-1AR	MW-11RR	MW-16B	MW-16A	MW-12B	MW-13B	MW-12AR
Date Collected:	Units	11/17/04	11/17/04	11/17/04	11/18/04	11/18/04	11/18/04	11/18/04	02/07/05	02/07/05	02/07/05	02/08/05	02/08/05	02/08/05	02/09/05	02/09/05	02/09/05
Metals																	
Iron	µg/L	10,800	25,200	24,400	10,700	10,800	10,900	78,600	4,790	3,010	69,600	3,950	7,880	10,600	4,930	6,400	31,700

Sample ID:		H85242	H85243	H85244	H85245	H85246	H85247	H85248	H85249	H85250	H85251	H85252	H85253	H85254	H85255	H85256	H85257
Well ID:		MW-13AR	MW-8AR	DUP [MW-8AR]	MW-8BR	MW-14AR	MW-15AR	DUP [MW-15AR]	MW-3AR	MW-7	MW-2R	MW-16A	MW-1AR	MW-11RR	MW-16B	MW-12B	MW-12AR
Date Collected:	Units	02/09/05	02/10/05	02/10/05	02/10/05	02/10/05	02/11/05	02/11/05	02/11/05	05/23/05	05/23/05	05/24/05	05/24/05	05/24/05	05/24/05	05/24/05	05/24/05
Metals																	
Iron	µg/L	60,400	25,300	25,600	10,100	9,960	10,600	10,600	81,100	1,440	12,000	12,000	93,200	5,240	9,380	5,210	35,500

Sample ID:		H85259	H85260	H85261	H85262	H85263	H85264	H85265	H85266	H85267	H85268	H85269	H85270	H85271	H85272	H85274	H85275
Well ID:		MW-8BR	MW-13B	MW-8AR	DUP [MW-8AR]	MW-13AR	MW-14AR	MW-15AR	DUP [MW-15AR]	MW-3AR	MW-7	MW-1AR	MW-2R	MW-11RR	MW-16A	MW-16B	MW-12AR
Date Collected:	Units	05/25/05	05/25/05	05/25/05	05/25/05	05/25/05	05/26/05	05/26/05	05/26/05	05/26/05	08/15/05	08/15/05	08/16/05	08/16/05	08/16/05	08/18/05	08/17/05
Metals																	
Iron	µg/L	13,800	7,520	22,300	22,300	50,700	10,900	11,800	11,500	28,000	3,290 J	63,900 J	10,100 J	5,220 J	10,000 J	7,490 J	34,600 J

Sample ID:		H85276	H85277	H85278	H85279	H85280	H85281	H85282	H85283	H85284	H85285	H85286	H85287	H85288	H85289	H85291	H85292
Well ID:		MW-12B	MW-13B	MW-8AR	DUP [MW-8AR]	MW-13AR	MW-8BR	MW-15AR	DUP [MW-15AR]	MW-14AR	MW-3AR	MW-1AR	MW-2R	MW-7	MW-11RR	MW-12B	MW-16A
Date Collected:	Units	08/17/05	08/17/05	08/17/05	08/17/05	08/18/05	08/17/05	08/18/05	08/18/05	08/18/05	08/18/05	11/08/05	11/08/05	11/08/05	11/08/05	11/09/05	11/09/05
Metals																	
Iron	µg/L	5,290 J	7,940 J	29,800 J	29,700 J	45,900 J	12,200 J	9,500 J	9,660 J	10,300 J	15,700 J	59,400	12,800	4,190	6,610	5,660	10,700

Sample ID:		H85293	H85294	H85295	H85296	H85297	H85298	H85299	H85300	H85301	H85302	H85303	H85304	H85305	H85306	H85308	H85309
Well ID:		MW-12AR	MW-16B	MW-13B	MW-8BR	MW-8AR	DUP [MW-8AR]	MW-13AR	MW-15AR	DUP [MW-15AR]	MW-14AR	MW-3AR	MW-2R	MW-1AR	MW-7	MW-11RR	MW-12AR
Date Collected:	Units	11/09/05	11/09/05	11/10/05	11/10/05	11/10/05	11/10/05	11/10/05	11/11/05	11/11/05	11/11/05	11/11/05	02/08/06	02/08/06	02/08/06	02/08/06	02/09/06
Metals																	
Iron	µg/L	37,800	7,830	8,220	11,800	18,400	19,100	43,400	10,400	10,100	11,300	11,900	8,120	73,000	4,160	4,850	33,000

Sample ID:		H85310	H85311	H85312	H85313	H85314	H85315	H85316	H85317	H85318	H85319	H85320	H85321	H85322	H85323	H85325	H85326
Well ID:		MW-12B	MW-16A	MW-16B	MW-8BR	MW-13AR	MW-13B	MW-8AR	DUP [MW-8AR]	MW-3AR	MW-15AR	DUP [MW-15AR]	MW-14AR	MW-7	MW-2R	MW-1AR	MW-16A
Date Collected:	Units	02/09/06	02/09/06	02/09/06	02/09/06	02/09/06	02/09/06	02/10/06	02/10/06	02/10/06	02/10/06	02/10/06	02/10/06	05/08/06	05/08/06	05/09/06	05/09/06
Metals																	
Iron	µg/L	5,360	10,800	8,100	10,700	97,200	8,360	71,800	68,600	81,500	10,600	10,200	11,000	2,510	9,550	91,400	9,390

See Notes on Page 5.

Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit

Table 1 - Post-Remediation Groundwater Sampling Analytical Results for Iron

Sample ID:		H85328	H85330	H85331	H85332	H85333	H85334	H85335	H85336	H85337	H85338	H85339	H85340	H85341	H85342	H85343	H85344
Well ID:		MW-12AR	MW-12B	MW-13AR	MW-13B	MW-8BR	DUP [MW-8AR]	MW-8AR	MW-14AR	MW-16B	MW-3AR	DUP [MW-15AR]	MW-15AR	MW-11RR	MW-7	MW-2R	MW-1AR
Date Collected:	Units	05/09/06	05/09/06	05/10/06	05/10/06	05/10/06	05/10/06	05/10/06	05/11/06	05/11/06	05/11/06	05/11/06	05/11/06	05/11/06	08/21/06	08/21/06	08/22/06
Metals																	
Iron	µg/L	34,400	4,960	70,000	7,010	11,700	37,100	37,100	9,670	7,840	37,200	10,100	9,860	5,010	704 J	9,040 J	73,000 J

Sample ID:		H85345	H85347	H85348	H85349	H85350	H85351	H85352	H85353	H85354	H85355	H85356	H85357	H85358	H85359	H85360	H85361
Well ID:		MW-11RR	MW-16B	MW-16A	MW-12B	MW-13B	MW-12AR	MW-13AR	MW-8BR	MW-8AR	DUP [MW-8AR]	MW-14AR	MW-15AR	DUP [MW-15AR]	MW-3AR	MW-2R	MW-7
Date Collected:	Units	08/22/06	08/22/06	08/22/06	08/23/06	08/23/06	08/23/06	08/23/06	08/24/06	08/24/06	08/24/06	08/24/06	08/25/06	08/25/06	08/25/06	11/06/06	11/06/06
Metals																	
Iron	µg/L	4,710 J	6,610 J	8,970 J	5,100 J	7,690 J	35,200 J	54,200 J	10,900 J	33,800 J	33,700 J	10,300 J	9,430 J	9,390 J	15,200 J	8,360	3,770

Sample ID:		H85362	H85363	H85365	H85366	H85367	H85368	H85369	H85370	H85371	H85372	H85373	H85374	H85375	H85376	H85377	H85378
Well ID:		MW-1AR	MW-11RR	MW-16A	MW-16B	MW-12B	MW-13B	MW-13AR	MW-12AR	MW-8AR	DUP [MW-8AR]	MW-8BR	MW-14AR	MW-3AR	MW-15AR	DUP [MW-15AR]	MW-7
Date Collected:	Units	11/07/06	11/07/06	11/07/06	11/08/06	11/08/06	11/08/06	11/08/06	11/08/06	11/09/06	11/09/06	11/09/06	11/09/06	11/10/06	11/10/06	11/10/06	02/05/07
Metals																	
Iron	µg/L	74,200	5,230	10,000	7,580	4,940	7,680	66,400	33,200	37,900	36,800	9,400	10,100	45,600	9,390	9,740	4,370

Sample ID:		H85379	H85380	H85381	H85382	H85384	H85385	H85386	H85387	H85388	H85389	H85390	H85391	H85392	H85393	H85394	H85395
Well ID:		MW-1AR	MW-2R	MW-16A	MW-11RR	MW-12B	MW-16B	MW-12AR	MW-13B	MW-8AR	DUP [MW-15AR]	MW-13AR	MW-8BR	MW-14AR	MW-15AR	DUP [MW-15AR]	MW-3AR
Date Collected:	Units	02/06/07	02/06/07	02/06/07	02/06/07	02/07/07	02/07/07	02/07/07	02/07/07	02/08/07	02/08/07	02/08/07	02/08/07	02/09/07	02/09/07	02/09/07	02/09/07
Metals																	
Iron	µg/L	83,500	9,650	10,200	4,550	4,890	7,590	39,600	8,330	35,500	35,800	66,100	9,620	8,780	9,800	9,720	61,100

Sample ID:		H85396	H85397	H85398	H85399	H85400	H85402	H85403	H85404	H85405	H85406	H85407	H85408	H85409	H85410	H85411	H85412
Well ID:		MW-7	MW-2R	MW-1AR	MW-11RR	MW-16A	MW-12B	MW-16B	MW-12AR	MW-13B	MW-13AR	MW-8AR	DUP [MW-8AR]	MW-8BR	MW-15AR	DUP [MW-15AR]	MW-14AR
Date Collected:	Units	05/07/07	05/08/07	05/08/07	05/08/07	05/08/07	05/09/07	05/09/07	05/09/07	05/09/07	05/09/07	05/10/07	05/10/07	05/10/07	05/10/07	05/10/07	05/10/07
Metals																	
Iron	µg/L	3,790	8,490	97,300	4,350	10,900	4,690	8,160	51,200	7,400	87,300	35,000	33,900	10,600	10,200	9,940	9,340

Sample ID:		H85413	H85414	H85415	H85416	H85418	H85419	H85420	H85421	H85422	H85423	H85424	H85425	H85426	H85427	H85428	H85429
Well ID:		MW-3AR	MW-7	MW-2R	MW-11RR	MW-1AR	MW-16B	MW-16A	MW-12B	MW-13B	MW-12AR	MW-13AR	MW-8AR	DUP [MW-8AR]	MW-8BR	MW-15AR	DUP [MW-15AR]
Date Collected:	Units	05/11/07	08/06/07	08/06/07	08/08/07	08/08/07	08/08/07	08/08/07	08/08/07	08/08/07	08/09/07	08/09/07	08/09/07	08/09/07	08/09/07	08/10/07	08/10/07
Metals																	
Iron	µg/L	33,900	4,650	10,100	5,850	98,400	11,300	7,940	5,590	6,960	51,400	62,400	27,700	28,600	14,600	10,100 J	10,100 J

Sample ID:		H85430	H85431	H85432	H85433	H85434	H85435	H85437	H85438	H85439	H85440	H85441	H85442	H85443	H85444	H85445	H85446
Well ID:		MW-14AR	MW-3AR	MW-7	MW-1AR	MW-2R	MW-11RR	MW-16A	MW-12B	MW-16B	MW-13B	MW-12AR	MW-13AR	MW8BR	MW-8AR	DUP [MW-8AR]	MW-14AR
Date Collected:	Units	08/10/07	08/10/07	10/29/07	10/30/07	10/30/07	10/30/07	10/30/07	10/30/07	10/30/07	10/31/07	10/31/07	10/31/07	10/31/07	10/31/07	10/31/07	11/01/07
Metals																	
Iron	µg/L	11,100 J	14,500 J	2,510	65,400	14,900	5,110	9,690	5,110	7,390	7,840	50,800	69,500	12,500	33,800	34,000	11,000

See Notes on Page 5.

Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit

Table 1 - Post-Remediation Groundwater Sampling Analytical Results for Iron

Sample ID:		H85447	H85448	H85449	H85450	H85451	H85452	H85453	H85455	H85456	H85457	H85458	H85459	H85460	H85461	H85462	H85463
Well ID:		DUP [MW-14AR]	MW-3AR	MW-15AR	MW-2R	MW-17	MW-1AR	MW-11RR	MW-16A	MW-16AB	MW-12AR	MW-12B	MW-8BR	MW-13B	MW-13AR	MW-8AR	DUP [MW-8AR]
Date Collected:	Units	11/01/07	11/02/07	11/02/07	02/11/08	02/11/08	02/12/08	02/12/08	02/12/08	02/13/08	02/13/08	02/13/08	02/14/08	02/14/08	02/14/08	02/14/08	02/14/08
Metals																	
Iron	µg/L	11,200	51,500	9,600	14,400	3,120	70,600	4,180	8,590	8,310	47,200	5,370	10,300	7,200	95,100	34,700	34,500

Sample ID:		H85464	H85465	H85466	H85467	H85468	H85469	H85470	H85471	H85473	H85474	H85475	H85476	H85477	H85478	H85479	H85480
Well ID:		MW-14AR	DUP [MW-14AR]	MW-15AR	MW-3AR	MW-7	MW-1AR	MW-2R	MW-11RR	MW-16A	MW-16B	MW-12AR	MW-12B	MW-13AR	MW-13B	MW-8AR	DUP [MW-8AR]
Date Collected:	Units	02/14/08	02/14/08	02/15/08	02/15/08	05/12/08	05/13/08	05/13/08	05/13/08	05/14/08	05/14/08	05/14/08	05/14/08	05/15/08	05/15/08	05/15/08	05/15/08
Metals																	
Iron	µg/L	9,770	9,600	9,950	55,700	39,100	64,600	17,200	4,270	11,600	9,180	56,300	5,360	93,900	7,200	33,900	34,100

Sample ID:		H85481	H85482	H85483	H85484	H85485	H85486	H85487	H85488	H85489	H85490	H85492	H85493	H85494	H85495	H85496	H85497
Well ID:		MW-8BR	MW-14AR	DUP [MW-14AR]	MW-15AR	MW-3AR	MW-7	MW-2R	MW-1AR	MW-11RR	MW-16A	MW-16B	MW-12B	MW-12AR	MW-13B	MW-13AR	MW-8BR
Date Collected:	Units	05/15/08	05/15/08	05/15/08	05/16/08	05/16/08	08/05/08	08/05/08	08/05/08	08/06/08	08/06/08	08/06/08	08/06/08	08/07/08	08/07/08	08/07/08	08/07/08
Metals																	
Iron	µg/L	13,500	11,000	11,000	14,600	28,400	55,700	11,600	82,600	5,930	10,700	8,240	5,030	53,100	6,910	65,000	14,000

Sample ID:		H85498	H85499	H85500	H85501	H85502	H85503	H85504	H85505	H85506	H85507	H85508	H85510	H85511	H85512	H85513	H85514
Well ID:		MW-8AR	DUP [MW-8AR]	MW-15AR	MW-14AR	DUP [MW-14AR]	MW-3AR	MW-7	MW-2R	MW-1AR	MW-16A	MW-11RR	MW-16B	MW-12B	MW-12AR	MW-13B	MW-8BR
Date Collected:	Units	08/07/08	08/07/08	08/08/08	08/08/08	08/08/08	08/08/08	11/03/08	11/03/08	11/04/08	11/04/08	11/04/08	11/05/08	11/05/08	11/05/08	11/05/08	11/06/08
Metals																	
Iron	µg/L	29,100	30,800	9,550	8,980	8,970	16,000	24,600	15,100	53,200	11,700	4,380	8,190	5,160	65,300	7,240	12,400

Sample ID:		H85515	H85516	H85517	H85518	H85519	H85520	H85521	H85522	H85523	H85524	H85525	H85526	H85528	H85529	H85530	H85531
Well ID:		MW-13AR	MW-14AR	DUP [MW-14AR]	MW-8AR	DUP [MW-8AR]	MW-15AR	MW-3AR	MW-7	MW-1AR	MW-2R	MW-11RR	MW-16A	MW-16B	MW-12B	MW-13B	MW-12AR
Date Collected:	Units	11/06/08	11/06/08	11/06/08	11/06/08	11/06/08	11/07/08	11/07/08	02/02/09	02/03/09	02/03/09	02/03/09	02/03/09	02/04/09	02/04/09	02/04/09	02/04/09
Metals																	
Iron	µg/L	52,800	10,700	10,800	36,600	36,600	8,700	10,100	4,470	56,200	9,930	3,930	10,700	7,140	4,590	6,500	63,000

Sample ID:		H85532	H85533	H85534	H85535	H85536	H85537	H85538	H85539	H85540	H85541	H85542	H85543	H85544	H85546	H85547	H85548
Well ID:		MW-13AR	MW-8BR	DUP [MW-8BR]	MW-8AR	MW-14AR	MW-15AR	DUP [MW-15AR]	MW-3AR	MW-7	MW-1AR	MW-2R	MW-11RR	MW-16A	DUP [MW-16A]	MW-16B	MW-12B
Date Collected:	Units	02/05/09	02/05/09	02/05/09	02/05/09	02/05/09	02/06/09	02/06/09	02/06/09	05/18/09	05/19/09	05/19/09	05/19/09	05/19/09	05/19/09	05/20/09	05/20/09
Metals																	
Iron	µg/L	56,800	11,800	11,400	31,000	10,400	9,640	9,560	20,800	5,700	86,800	10,800	4,120	14,600	14,500	7,320	4,330

Sample ID:		H85551	H85552	H85553	H85554	H85555	H85556	H85557	H85558	H85559	H85560	H85561	H85562	H85563	H85564	H85566	H85567
Well ID:		MW-13B	MW-12AR	MW-13AR	DUP [MW-13AR]	MW-14AR	MW-8BR	MW-8AR	MW-15AR	MW-3AR	MW-7	MW-1AR	MW-2R	MW-11RR	MW-16A	MW-16B	MW-12B
Date Collected:	Units	05/20/09	05/20/09	05/21/09	05/21/09	05/21/09	05/21/09	05/21/09	05/22/09	05/22/09	08/17/09	08/18/09	08/18/09	08/18/09	08/19/09	08/18/09	08/18/09
Metals																	
Iron	µg/L	6,540	62,700	86,800	86,800	9,580	13,000	42,900	10,100	29,900	5,380	80,900	11,100	5,060	12,300	8,020	4,990

See Notes on Page 5.

Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit

Table 1 - Post-Remediation Groundwater Sampling Analytical Results for Iron

Sample ID:		H85568	H85569	H85570	H85571	H85572	H85573	H85574	H85575	H85576	H85577	H85578	H85579	H85580	H85582	H85583	H85584
Well ID:		MW-12AR	MW-13B	MW-13AR	DUP [MW-13AR]	MW-8BR	MW-8AR	MW-14AR	DUP [MW-14AR]	MW-15AR	MW-3AR	MW-11RR	MW-1AR	MW-16A	MW-16B	MW-12B	MW-12AR
Date Collected:	Units	08/19/09	08/19/09	08/19/09	08/19/09	08/19/09	08/19/09	08/20/09	08/20/09	08/20/09	08/21/09	11/10/09	11/10/09	11/10/09	11/10/09	11/10/09	11/11/09
Metals																	
Iron	µg/L	58,100	7,360	71,200	69,700	14,900	40,700	10,900	10,700	8,970	16,700	5,670	57,200	12,200	8,450	5,150	52,900

Sample ID:		H85585	H85586	H85587	H85588	H85589	H85590	H85591	H85592	H85593	H85594	H85595	H85596	H85597	H85598	H85599	H85600
Well ID:		MW-13B	MW-13AR	DUP [MW-13AR]	MW-8BR	MW-8AR	MW-14AR	DUP [MW-14AR]	MW-15AR	MW-3AR	MW-2R	MW-7	MW-2R	MW-7	MW-11RR	DUP [MW-11RR]	MW-1AR
Date Collected:	Units	11/11/09	11/11/09	11/11/09	11/11/09	11/12/09	11/12/09	11/12/09	11/12/09	11/12/09	11/13/09	11/09/09	02/15/10	02/15/10	02/16/10	02/16/10	02/16/10
Metals																	
Iron	µg/L	7,670	72,800	72,200	13,900	32,900	11,100	10,800	10,800	35,300	15,100	12,400	10,700	5,070	4,190	5,310	57,300

Sample ID:		H85602	H85603	H85604	H85605	H85606	H85607	H85608	H85609	H85610	H85611	H85612	H85613	H85614	H85615	H85616	H85617
Well ID:		MW-16A	MW-16B	MW-12B	MW-12AR	MW-13B	DUP [MW-13B]	MW-13AR	MW-8BR	MW-8AR	MW-14AR	MW-3AR	MW-15AR	MW-7	MW-2R	MW-1AR	MW-11RR
Date Collected:	Units	02/16/10	02/16/10	02/17/10	02/17/10	02/17/10	02/17/10	02/17/10	02/18/10	02/18/10	02/18/10	02/18/10	02/18/10	05/24/10	05/24/10	05/24/10	05/24/10
Metals																	
Iron	µg/L	10,900	7,500	4,720	48,900	5,920	5,900	70,000	13,300	41,000	9,700	18,100	11,400	4,350	15,400	62,700	3,980

Sample ID:		H85619	H85620	H85621	H85622	H85623	H85624	H85625	H85626	H85627	H85628	H85629	H85630	H85631	H85632	H85633	H85634
Well ID:		MW-16B	MW-16A	MW-12B	DUP [MW-12B]	MW-12AR	MW-13B	MW-13AR	MW-8AR	MW-8BR	MW-14AR	MW-15AR	DUP [MW-15AR]	MW-3AR	MW-7	MW-2R	DUP [MW-2R]
Date Collected:	Units	05/25/10	05/25/10	05/25/10	05/25/10	05/25/10	05/26/10	05/26/10	05/26/10	05/26/10	05/26/10	05/27/10	05/27/10	05/27/10	08/23/10	08/23/10	08/23/10
Metals																	
Iron	µg/L	7,740	12,000	3,800	3,810	43,600	5,970	86,200	26,000	12,000	10,300	11,000	10,900	23,100	12,500	10,700	11,200

Sample ID:		H85635	H85636	H85638	H85639	H85640	H85641	H85642	H85643	H85644	H85645	H85646	H85647	H85648	H85649	H85650	H85651
Well ID:		MW-11RR	MW-1AR	MW-16A	MW-16B	MW-12AR	MW-12B	MW-13AR	MW-13B	DUP [MW-13B]	MW-8BR	MW-8AR	MW-14AR	MW-15AR	MW-3AR	MW-7	MW-1AR
Date Collected:	Units	08/24/10	08/24/10	08/24/10	08/24/10	08/24/10	08/25/10	08/25/10	08/25/10	08/25/10	08/25/10	08/26/10	08/26/10	08/27/10	08/27/10	11/15/10	11/16/10
Metals																	
Iron	µg/L	5,880	73,300	12,100	7,650	39,700	5,130	70,200	6,660	6,400	12,400	33,800	11,000	11,500	12,300	4,430	77,200

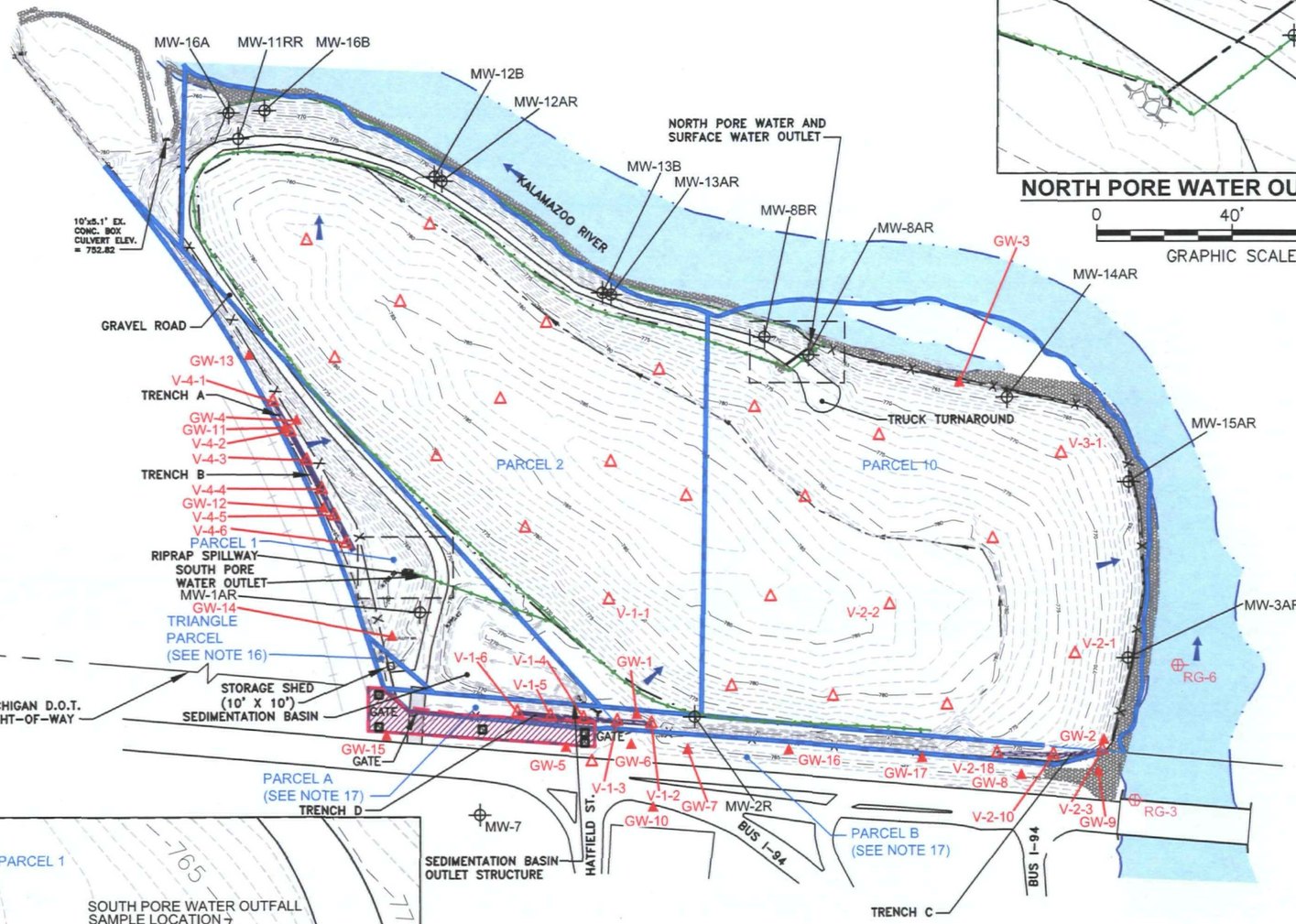
Sample ID:		H85652	H85653	H85655	H85656	H85657	H85658	H85659	H85660	H85661	H85662	H85663	H85664	H85665	H85666	H85667
Well ID:		MW-2R	MW-11RR	MW-16A	MW-16B	MW-12B	MW-13B	MW-12AR	DUP [MW-12AR]	MW-8BR	MW-13AR	MW-8AR	MW-14AR	MW-3AR	MW-15AR	DUP [MW-15AR]
Date Collected:	Units	11/16/10	11/16/10	11/16/10	11/16/10	11/17/10	11/17/10	11/17/10	11/17/10	11/18/10	11/18/10	11/18/10	11/18/10	11/19/10	11/19/10	11/19/10
Metals																
Iron	µg/L	10,700	6,160	10,700	7,760	4,960	6,390	42,700	41,800	13,500	64,800	27,900	10,100	10,500	10,100	9,900

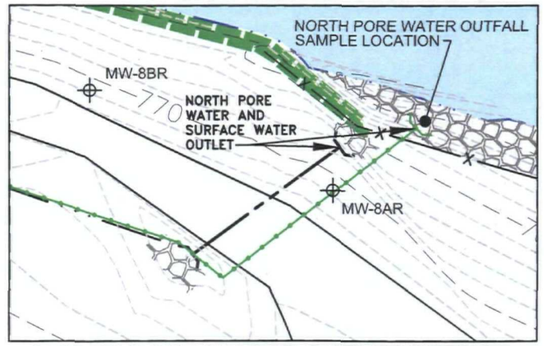
Notes:
1. µg/L - Micrograms per liter.
2. Sample IDs H85549 and H85550 correspond to Matrix Spike/Matrix Spike Duplicate samples associated with Sample ID H85548, and were therefore not included hereon.

Definitions of Data Qualifiers:
J - The compound/analyte was positively identified; however, the associated numerical value is an estimated concentration only.

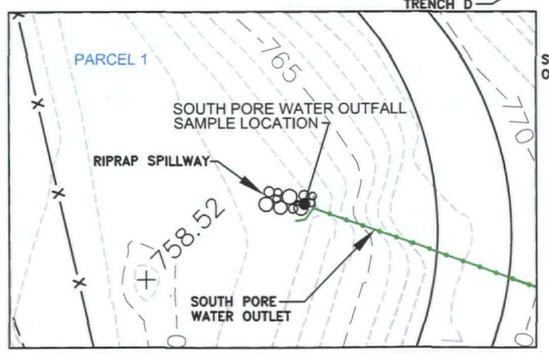
ARCADIS

Figures





NORTH PORE WATER OUTLET DETAIL



SOUTH PORE WATER OUTLET DETAIL

LEGEND:

- APPROXIMATE PARCEL BOUNDARY
- DITCH LINE
- ABANDONED RAILROAD
- SHEETPILE WALL
- ACCESS ROAD
- RIPRAP
- CULVERT PIPE
- FINAL AS-BUILT INDEX CONTOUR
- FINAL AS-BUILT INTERMEDIATE CONTOUR
- SECURITY FENCE
- PORE WATER COLLECTION PIPE
- PORE WATER DRAIN
- APPROXIMATE WATER EDGE
- GAS VENTS (ORIGINAL 23; ONLY FOUR WERE GIVEN IDs)
- V-1-2 CUTOFF TRENCH GAS VENTS
- LANDFILL GAS CUTOFF TRENCH
- FLOW DIRECTION
- MW-14 MONITORING WELL
- RG-3 RIVER GAUGE STATION
- GW-2 LOCATION OF GAS MONITORING PROBES
- PARCEL C DEMARCATION LAYER (ORANGE NON-WOVEN GEOTEXTILE LOCATED APPROXIMATELY 1 FOOT BELOW GRADE)
- PARCEL C PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INSTALLED PERMANENT MARKERS

NOTES:

1. BASE MAP INFORMATION OBTAINED FROM CADD DRAWING FILE DEVELOPED BY RMT, INC., ANN ARBOR, MICHIGAN (CADD FILE: L1630SU01.DWG AS-BUILT SURVEY; 8/21/00).
2. FINAL AS-BUILT CONTOUR ELEVATIONS ARE SHOWN AND ARE BASED ON A FIELD SURVEY BY ATWELL-HICKS, INC., DATED 9/27/00 WITH REVISIONS DATED 10/23/00, 12/21/01, 12/10/02, AND 7/24/03.
3. FINAL AS-BUILT CONTOUR ELEVATIONS OF SEDIMENTATION BASIN ARE BASED ON A FIELD SURVEY BY PREIN & NEWHOF, DATED 2/3/04.
4. DEMARCATION LAYER, PROPERTY BOUNDARY, AND FINAL AS-BUILT CONTOUR ELEVATIONS OF PARCEL C AND SURROUNDING AREAS BASED ON A FIELD SURVEY BY PREIN & NEWHOF, DATED 11/19/2010.
5. ELEVATIONS ARE BASED ON NGVD OF 1929 (MSL).
6. PROPERTY SURVEY PERFORMED BY WILKINS & WHEATON ENGINEERING CO., INC., ON 7/1/96.
7. TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT.
8. LOCATIONS OF GW-5, GW-6, GW-7, GW-8, GW-9, AND GW-10 ARE BASED ON A FIELD SURVEY BY TERRA CONTRACTING LLC, DATED 9/23/05.
9. LOCATION OF GW-11 IS BASED ON A FIELD SURVEY BY TERRA CONTRACTING LLC, DATED 1/11/06.
10. LOCATIONS OF RG-6, V-4-4, V-4-5, AND V-4-6 ARE BASED ON A FIELD SURVEY BY TERRA CONTRACTING LLC, DATED 6/7/06.
11. LOCATIONS OF V-1-2 THROUGH V-1-6, V-2-3, V-2-10, AND V-2-18 ARE BASED ON MULTIPLE FIELD SURVEYS CONDUCTED BY TERRA CONTRACTING, LLC. IN APRIL 2008. GAS VENTS V-2-4 THROUGH V-2-9, AND V-2-11 THROUGH V-2-17 ARE NOT SHOWN FOR CLARITY PURPOSES (THESE VENTS ARE LOCATED ALONG TRENCH C).
12. LOCATION OF GW-12 IS APPROXIMATE.
13. LOCATIONS OF GW-13 THROUGH GW-17 BASED ON FIELD SURVEY CONDUCTED BY PREIN & NEWHOF ON 11/1/11.
14. LOCATION OF SHEETPILE WALL AND A PORTION OF THE MONITORING WELLS ARE BASED ON A FIELD SURVEY BY ATWELL-HICKS, INC. DATED 9/27/00.
15. PARCELS 1, 2, 10, A, B, AND THE TRIANGLE PARCEL ARE OWNED BY GEORGIA-PACIFIC.
16. GEORGIA-PACIFIC PURCHASED THIS PORTION OF THE PROPERTY (THE "TRIANGLE PARCEL") FROM THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) IN EARLY 2006.
17. GEORGIA-PACIFIC PURCHASED THIS PORTION OF THE KING HIGHWAY (M-95) RIGHT-OF-WAY THAT IS ENCLOSED BY THE KING HIGHWAY LANDFILL SITE BOUNDARY FENCE IN JUNE 2008, WHICH IS COMPRISED OF PARCEL A (PREVIOUSLY OWNED BY MDOT) AND PARCEL B (PREVIOUSLY OWNED BY THE CITY OF KALAMAZOO).

ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE

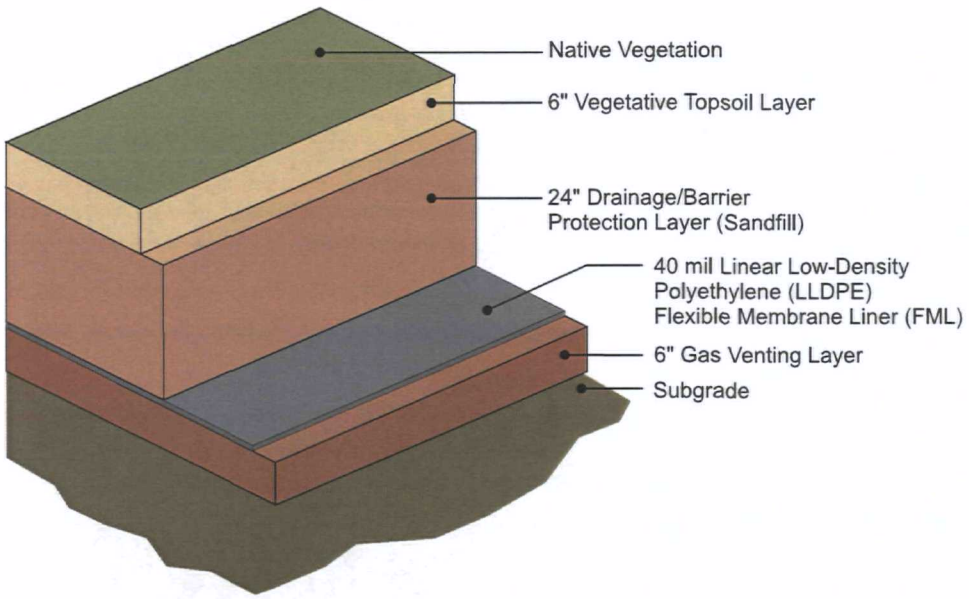
SAMPLING PLAN FOR PORE WATER COLLECTION SYSTEM OUTFALLS

SITE PLAN AND PROPOSED SAMPLE LOCATIONS

ARCADIS

FIGURE 1

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: G. STOWELL L: POSENAUER, L. FORAKER LD: PIC: D. COWIN PM: D. PENNIMAN TM: D. PENNIMAN LYR: ON=*; OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\B0064583\000300907\PORE WATER\64583001.DWG LAYOUT: 1 SAVED: 3/19/2012 10:19 AM ACADVER: 18.1S (LMS TECH) PAGESETUP:
XREFS:
64583X11
64583XBL
IMAGES:
PROJECTNAME: —



FINAL COVER SYSTEM DETAIL

NOT TO SCALE

NOTE:

1. The barrier protection and gas venting layers consists of imported, permeable, clean soil.

ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE

SAMPLING PLAN FOR PORE WATER COLLECTION SYSTEM OUTFALLS

FINAL COVER SYSTEM CROSS-SECTION DETAIL

ARCADIS

FIGURE
2

ARCADIS

Attachment 1

Certificate of Aggregates from
Aggregate Resources, Inc.

AGGREGATE RESOURCES, INC.

AGGREGATE PRODUCTION AND SALES

1500 RIVER STREET KALAMAZOO, MICHIGAN 49048
PHONE (269) 345-5289 FAX (269) 345-1137

AGGREGATE RESOURCES MDOT 39-69	MIDWAY AGGREGATE MDOT 39-64	4TH STREET AGGREGATE MDOT 39-73	QUINCY AGGREGATE MDOT 12-37	RAVINE AGGREGATE MDOT 39-56	HART AGGREGATE MDOT 38-100

Gun River
Aggregates
MDOT 03-106

RE: Certification of Aggregates; Aggregate Resources, Inc.'s above listed pits.

Please consider this correspondence as formal notice that all Aggregates from the above named facilities are virgin and native materials that are produced/mined at the site. The products are free from contaminants and will meet the parameters of clean material as defined by the MDEQ.

If you or your Engineer on site have any questions please feel free to contact me at 269-345-5289 or my cell 269-209-3931

Phil Cole
Sales Mgr.

ARCADIS

Attachment 2

November 11, 1998 Sharon Bailey, RMT, Inc. Letters to Bill Rankin, P.E., Blasland, Bouck, & Lee, Inc.

SUBMITTAL No. 8

November 11, 1998

REVIEWED ☒ REVIEWED & NOTED

REVIEWED SOLEY FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS

BLASLAND, BOUCK & LEE, INC.

W. A. Rankin III

SIGNATURE

11/19/98 Date

Syr. Office Location

☐ RESUBMIT ☐ REJECTED

Mr. Bill Rankin
Project Engineer
Blasland Bouck & Lee
6723 Towpath Road
Syracuse, NY 13214

Subject: Sand Drainage Material
King Highway Landfill
Georgia-Pacific Corporation
Kalamazoo, Michigan

Dear Bill:

RMT, Inc, Michigan (RMT) has reviewed the laboratory data on the sand drainage material supplied by Taplin Environmental Contracting (Taplin) for use in stabilizing Cell 4 at the King Highway Landfill. Two samples of the material were collected and submitted to a testing laboratory for chemical analysis. Prior to the sampling event, it was agreed by RMT and Blasland Bouck & Lee that two rounds of sampling would be conducted on each of the proposed borrow sources for the list of parameters identified by the Michigan Department of Environmental Quality in BB&L's letter dated October 7, 1998, as potential constituents of concern.

In reviewing the results of the two rounds of sampling, the VOCs (including acteone and naphthalene), PCBs, phenol, and 4-methylphenol were all below detection limits; metals were detected at levels less that the State of Michigan's Soil Residential and Commercial 1 direct contact cleanup criteria and in many instances were less than the state's generic background levels. After reviewing this information, it is our opinion that the supplied material is acceptable for its intended use and is in general conformance with the overall intent of the project design and specifications.

Please Submit Informat Also.

Sincerely,

RMT, Inc., Michigan

Sharon L. Bailey, P.E.
Senior Project Manager

Attachments:

cc: Paul Montney, Georgia-Pacific

RMT, INC., MICHIGAN
1143 HIGHLAND DRIVE, SUITE B - 48108-2237
P.O. Box 991 - 48106-0991
ANN ARBOR, MI
734/971-7080 - 734/971-9022 FAX

WESTERN MICHIGAN
ENVIRONMENTAL SERVICES, INC.
Analytical Laboratory and Testing Services

3352 128th Avenue, Holland, Michigan 49424-9263
Phone: 616-399-6070 FAX 616-399-6185
E-mail: info@wmesi.com
Internet: http://www.wmesi.com

CLIENT: Taplin Environmental Cont
5100 West Michigan Avenue
Kalamazoo, MI 49006

Attn: Steve Taplin
Re: RMT: G-P (King Highway LF)

DATE: October 9, 1998

ANALYSIS OF: Soil Samples

REPORTED BY: Robert K. Zahray, Laboratory Manager

DATE RECEIVED: Received from client on October 2, 1998.

Sample ID: 003 (Class II Fill) Lab ID: 9810030-01 Collected: 09/29/98

TEST	RESULT	UNITS	ANALYZED	BY	METHOD	MDL
Total Solids	98.9	% of sample	10/06/98	JA	APHA 2540 B.	N/A
Arsenic	1.5	mg/kg dry wt.	10/07/98	JA	EPA 7060	0.24
Barium	3.7	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.12
Chromium	3.0	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.12
[illegible]	1.4	mg/kg dry wt.	10/06/98	JA	EPA 6010	1.2
[illegible]als Prep, Solid	10/06/98	date digested		JA	EPA 3050	
Thallium	BDL	mg/kg dry wt.	10/07/98	JA	EPA 7841	0.24
Vanadium	4.1	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.24
Zinc	13	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.24
4-Methylphenol	BDL	µg/kg dry wt	10/07/98	DAH	EPA 8270	330
Acid/Permanganate Cleanup	10/07/98	date completed		DGK	EPA 3665	
Florisil Cleanup	10/07/98	date completed		DGK	EPA 3620	
Phenol	BDL	µg/kg dry wt	10/07/98	DAH	EPA 8270	330
Polychlorinated Biphenyls					EPA 8082	
PCB-1016	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1221	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1232	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1242	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1248	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1254	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1260	BDL	µg/kg dry wt	10/07/98	DGK		330
Total PCBs	BDL	µg/kg dry wt	10/07/98	DGK		1,700
Silica Gel Cleanup	10/07/98	date completed		DGK	EPA 3630	
Soxhlet Ext. for PCBs	10/06/98	prep. date		DGK	EPA 3540	
Soxhlet Extraction for BNA	10/06/98	prep. date		HL	EPA 3540	
Sulfur Cleanup	10/07/98	date completed		DGK	EPA 3660	
Volatile Organic Compounds					EPA 8260	
Acrylonitrile	BDL	µg/kg dry wt	10/07/98	DAH		10
Benzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Bromochloromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Bromodichloromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Bromoform	BDL	µg/kg dry wt	10/07/98	DAH		10
Bromomethane	BDL	µg/kg dry wt	10/07/98	DAH		10
2-Butanone	BDL	µg/kg dry wt	10/07/98	DAH		50
[illegible]arbon Disulfide	BDL	µg/kg dry wt	10/07/98	DAH		50
[illegible]rbon tetrachloride	BDL	µg/kg dry wt	10/07/98	DAH		10
[illegible]hlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Chloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10

BDL = Below Detection Limit
MDL = Method Detection Limit

e ID: 003 (Class II Fill) Lab ID: 9810030-01 Collected: 09/29/98

TEST	RESULT	UNITS	ANALYZED	BY	METHOD	MDL
Volatile Organic Compounds					EPA 8260	
Chloroform	BDL	µg/kg dry wt	10/07/98	DAH		10
Chloromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Dibromochloromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2-Dibromo-3-chloropropane	BDL	µg/kg dry wt	10/07/98	DAH		10
Dibromomethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2-Dibromoethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2-Dichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,3-Dichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,4-Dichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Trans-1,4-dichloro-2-butene	BDL	µg/kg dry wt	10/07/98	DAH		10
Dichlorodifluoromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1-Dichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2-Dichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1-Dichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
cis-1,2-Dichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
trans-1,2-Dichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2-Dichloropropane	BDL	µg/kg dry wt	10/07/98	DAH		10
cis-1,3-Dichloropropene	BDL	µg/kg dry wt	10/07/98	DAH		10
trans-1,3-Dichloropropene	BDL	µg/kg dry wt	10/07/98	DAH		10
Diethyl Ether	BDL	µg/kg dry wt	10/07/98	DAH		50
Ethylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Hexachloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
2-Hexanone	BDL	µg/kg dry wt	10/07/98	DAH		50
Isopropylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Methylene Chloride	BDL	µg/kg dry wt	10/07/98	DAH		250
Methyl Iodide	BDL	µg/kg dry wt	10/07/98	DAH		10
ethylnaphthalene	BDL	µg/kg dry wt	10/07/98	DAH		10
Methyl-2-Pentanone	BDL	µg/kg dry wt	10/07/98	DAH		50
Methyl Tertiary Butyl Ether	BDL	µg/kg dry wt	10/07/98	DAH		50
Naphthalene	BDL	µg/kg dry wt	10/07/98	DAH		10
2-Propanone	BDL	µg/kg dry wt	10/07/98	DAH		250
n-Propylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Styrene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,1,2-Tetrachloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,2,2-Tetrachloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Tetrachloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
Toluene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,1-Trichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2,4-Trichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,2-Trichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Trichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
Trichlorofluoromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2,3-Trichloropropane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2,4-Trimethylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,3,5-Trimethylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Vinyl acetate	BDL	µg/kg dry wt	10/07/98	DAH		10
Vinyl chloride	BDL	µg/kg dry wt	10/07/98	DAH		10
o-Xylene	BDL	µg/kg dry wt	10/07/98	DAH		10
m-Xylene & p-Xylene	BDL	µg/kg dry wt	10/07/98	DAH		10

BDL = Below Detection Limit
MDL = Method Detection Limit

Sample ID: 004 (Class II Fill) Lab ID: 9810030-02 Collected: 09/29/98

TEST	RESULT	UNITS	ANALYZED	BY	METHOD	MDL
Total Solids	99.3	% of sample	10/06/98	JA	APHA 2540 B.	N/A
Arsenic	1.5	mg/kg dry wt.	10/07/98	JA	EPA 7060	0.24
Barium	88	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.12
Chromium	11	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.12
Lead	22	mg/kg dry wt.	10/06/98	JA	EPA 6010	1.2
Metals Prep, Solid	10/06/98	date digested		JA	EPA 3050	
Thallium	BDL	mg/kg dry wt.	10/07/98	JA	EPA 7841	0.24
Vanadium	25	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.24
Zinc	28	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.24
4-Methylphenol	BDL	µg/kg dry wt	10/07/98	DAH	EPA 8270	330
Acid/Permanganate Cleanup	10/07/98	date completed		DGK	EPA 3665	
Florisil Cleanup	10/07/98	date completed		DGK	EPA 3620	
Phenol	BDL	µg/kg dry wt	10/07/98	DAH	EPA 8270	330
Polychlorinated Biphenyls					EPA 8082	
PCB-1016	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1221	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1232	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1242	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1248	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1254	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1260	BDL	µg/kg dry wt	10/07/98	DGK		330
Total PCBs	BDL	µg/kg dry wt	10/07/98	DGK		1,700
Silica Gel Cleanup	10/07/98	date completed		DGK	EPA 3630	
Soxhlet Ext. for PCBs	10/06/98	prep. date		DGK	EPA 3540	
Soxhlet Extraction for BNA	10/06/98	prep. date		HL	EPA 3540	
Sulfur Cleanup	10/07/98	date completed		DGK	EPA 3660	
Volatile Organic Compounds					EPA 8260	
rylonitrile	BDL	µg/kg dry wt	10/07/98	DAH		10
nzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Bromochloromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Bromodichloromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Bromoform	BDL	µg/kg dry wt	10/07/98	DAH		10
Bromomethane	BDL	µg/kg dry wt	10/07/98	DAH		10
2-Butanone	BDL	µg/kg dry wt	10/07/98	DAH		50
Carbon Disulfide	BDL	µg/kg dry wt	10/07/98	DAH		50
Carbon tetrachloride	BDL	µg/kg dry wt	10/07/98	DAH		10
Chlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Chloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Chloroform	BDL	µg/kg dry wt	10/07/98	DAH		10
Chloromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Dibromochloromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2-Dibromo-3-chloropropane	BDL	µg/kg dry wt	10/07/98	DAH		10
Dibromomethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2-Dibromoethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2-Dichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,3-Dichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,4-Dichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Trans-1,4-dichloro-2-butene	BDL	µg/kg dry wt	10/07/98	DAH		10
Dichlorodifluoromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1-Dichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2-Dichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1-Dichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
cis-1,2-Dichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
trans-1,2-Dichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2-Dichloropropane	BDL	µg/kg dry wt	10/07/98	DAH		10
cis-1,3-Dichloropropene	BDL	µg/kg dry wt	10/07/98	DAH		10
trans-1,3-Dichloropropene	BDL	µg/kg dry wt	10/07/98	DAH		10
Diethyl Ether	BDL	µg/kg dry wt	10/07/98	DAH		50
thylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
exachloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
2-Hexanone	BDL	µg/kg dry wt	10/07/98	DAH		50
Isopropylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10

BDL = Below Detection Limit
MDL = Method Detection Limit

le ID: 004 (Class II Fill) Lab ID: 9810030-02 Collected: 09/29/98

TEST	RESULT	UNITS	ANALYZED	BY	METHOD	MDL
Volatile Organic Compounds					EPA 8260	
Methylene Chloride	BDL	µg/kg dry wt	10/07/98	DAH		250
Methyl Iodide	BDL	µg/kg dry wt	10/07/98	DAH		10
2-Methylnaphthalene	BDL	µg/kg dry wt	10/07/98	DAH		10
4-Methyl-2-Pentanone	BDL	µg/kg dry wt	10/07/98	DAH		50
Methyl Tertiary Butyl Ether	BDL	µg/kg dry wt	10/07/98	DAH		50
Naphthalene	BDL	µg/kg dry wt	10/07/98	DAH		10
2-Propanone	BDL	µg/kg dry wt	10/07/98	DAH		250
n-Propylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Styrene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,1,2-Tetrachloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,2,2-Tetrachloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Tetrachloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
Toluene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,1-Trichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2,4-Trichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,2-Trichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Trichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
Trichlorofluoromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2,3-Trichloropropane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2,4-Trimethylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,3,5-Trimethylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Vinyl acetate	BDL	µg/kg dry wt	10/07/98	DAH		10
Vinyl chloride	BDL	µg/kg dry wt	10/07/98	DAH		10
o-Xylene	BDL	µg/kg dry wt	10/07/98	DAH		10
m-Xylene & p-Xylene	BDL	µg/kg dry wt	10/07/98	DAH		10

NOTE: Samples were collected in bulk.

BDL = Below Detection Limit
MDL = Method Detection Limit

Taplin Environmental Contracting
5100 W. Michigan Avenue
Kalamazoo, MI 49006
616-375-9595

CHAIN-OF-CUSTODY RECORD

RECEIVING ENTITY: Western Michigan Env
ENTITY CONTACT/PHONE: 616 3996070

CHAIN-OF-CUSTODY № CH [illegible]63
PROJECT MANAGER: Steve Taplin
TAPLIN SITE PHONE: 616 2260231

Name of Client	Project Name, City, State	Project #	P.O. #
RMT, Inc.	68 King Highway Landfill	21864-R	3583

	Item Number	Date	Time	Sample Number	Number & Size of Containers	Description	BTEX*	TPH**	PNA***	FLASH POINT					Transfer # 1	2	3	4
-1	1	9/29	4 pm	003	(1) 32 oz.	CLASS II Fill From Fulton		See Attached										
-2	2	"	"	004	" "	" " " " "												
						* Balkema Sand & Gravel												

Trans. #	Item #	Samples Relinquished By	Accepted By	Date	Time
1			T.B. Benton	10/02/98	1200
2					
3					
4					

TOTALS

FAX results to:
616-375-2830

Send hard copy & QA/QC data results to Pat Taplin at Terra

Person Responsible for Samples	Affiliation	Date	Time	Special Instructions (use back of form if necessary - attach photocopies to other pages)

REVISED 4-2-90

* BTEX: Benzene, Toluene, Ethyl Benzene, Xylene; ** TPH: Total Petroleum Hydrocarbons, *** PNA: Poly Nuclear Aromatics

WESTERN MICHIGAN
ENVIRONMENTAL SERVICES, INC.
Analytical Laboratory and Testing Services

3352 128th Avenue, Holland, Michigan 49424-9263
Phone: 616-399-6070 FAX: 616-399-6185
E-mail: info@wmesi.com
Internet: http://www.wmesi.com

CLIENT: Taplin Environmental Cont
5100 West Michigan Avenue
Kalamazoo, MI 49006

Attn: Steve Taplin
Re: RMT, Inc. (G.P. King Hwy LF)

DATE: November 17, 1998

ANALYSIS OF: Soil Samples

REPORTED BY: Robert K. Zahray, Laboratory Manager

DATE RECEIVED: Received from client on November 13, 1998.

Sample ID: Sample 05 Lab ID: 9811168-01 Collected: 11/12/98

TEST	RESULT	UNITS	ANALYZED	BY	METHOD	MDL
Total Solids	93.8	% of sample	11/16/98	JA	APHA 2540 B.	N/A
Arsenic	0.99	mg/kg dry wt.	11/14/98	JA	EPA 7060	0.048
Barium	5.0	mg/kg dry wt.	11/16/98	MBR	EPA 6010	0.24
Chromium	2.5	mg/kg dry wt.	11/16/98	MBR	EPA 6010	0.24
Lead	BDL	mg/kg dry wt.	11/16/98	MBR	EPA 6010	2.4
...ls Prep, Solid	11/14/98	date digested		JA	EPA 3050	
...allium	BDL	mg/kg dry wt.	11/16/98	JA	EPA 7841	0.048
Vanadium	3.4	mg/kg dry wt.	11/16/98	MBR	EPA 6010	0.48
Zinc	8.2	mg/kg dry wt.	11/16/98	MBR	EPA 6010	0.48
4-Methylphenol	BDL	µg/kg dry wt	11/17/98	HL	EPA 8270	25
Acid/Permanganate Cleanup	11/16/98	date completed		DGK	EPA 3665	
Florisil Cleanup	11/16/98	date completed		DGK	EPA 3620	
Phenol	BDL	µg/kg dry wt	11/17/98	HL	EPA 8270	25
Polychlorinated Biphenyls					EPA 8082	
PCB-1016	BDL	µg/kg dry wt	11/16/98	DGK		19
PCB-1221	BDL	µg/kg dry wt	11/16/98	DGK		19
PCB-1232	BDL	µg/kg dry wt	11/16/98	DGK		19
PCB-1242	BDL	µg/kg dry wt	11/16/98	DGK		19
PCB-1248	BDL	µg/kg dry wt	11/16/98	DGK		19
PCB-1254	BDL	µg/kg dry wt	11/16/98	DGK		19
PCB-1260	BDL	µg/kg dry wt	11/16/98	DGK		19
Total PCBs	BDL	µg/kg dry wt	11/16/98	DGK		95
Silica Gel Cleanup	11/16/98	date completed		DGK	EPA 3630	
Soxhlet Ext. for PCBs	11/13/98	prep. date		DGK	EPA 3540	
Soxhlet Extraction for BNA	11/13/98	prep. date		DGK	EPA 3540	
Sulfur Cleanup	11/16/98	date completed		DGK	EPA 3660	
Volatile Organic Compounds					EPA 8260	
Acrylonitrile	BDL	µg/kg dry wt	11/13/98	HL		50
Benzene	BDL	µg/kg dry wt	11/13/98	HL		10
Bromochloromethane	BDL	µg/kg dry wt	11/13/98	HL		10
Bromodichloromethane	BDL	µg/kg dry wt	11/13/98	HL		10
Bromoform	BDL	µg/kg dry wt	11/13/98	HL		10
Bromomethane	BDL	µg/kg dry wt	11/13/98	HL		50
2-Butanone	BDL	µg/kg dry wt	11/13/98	HL		50
Carbon Disulfide	BDL	µg/kg dry wt	11/13/98	HL		50

BDL = Below Detection Limit
MDL = Method Detection Limit

Sample ID: Sample 05 Lab ID: 9811168-01 Collected: 11/12/98

	RESULT	UNITS	ANALYZED	BY	METHOD	MDL
Volatile Organic Compounds					EPA 8260	
Carbon tetrachloride	BDL	µg/kg dry wt	11/13/98	HL		10
Chlorobenzene	BDL	µg/kg dry wt	11/13/98	HL		10
Chloroethane	BDL	µg/kg dry wt	11/13/98	HL		50
Chloroform	BDL	µg/kg dry wt	11/13/98	HL		10
Chloromethane	BDL	µg/kg dry wt	11/13/98	HL		50
Dibromochloromethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2-Dibromo-3-chloropropane	BDL	µg/kg dry wt	11/13/98	HL		50
Dibromomethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2-Dibromoethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2-Dichlorobenzene	BDL	µg/kg dry wt	11/13/98	HL		10
1,3-Dichlorobenzene	BDL	µg/kg dry wt	11/13/98	HL		10
1,4-Dichlorobenzene	BDL	µg/kg dry wt	11/13/98	HL		10
Trans-1,4-dichloro-2-butene	BDL	µg/kg dry wt	11/13/98	HL		10
Dichlorodifluoromethane	BDL	µg/kg dry wt	11/13/98	HL		50
1,1-Dichloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2-Dichloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,1-Dichloroethene	BDL	µg/kg dry wt	11/13/98	HL		10
cis-1,2-Dichloroethene	BDL	µg/kg dry wt	11/13/98	HL		10
trans-1,2-Dichloroethene	BDL	µg/kg dry wt	11/13/98	HL		10
1,2-Dichloropropane	BDL	µg/kg dry wt	11/13/98	HL		10
cis-1,3-Dichloropropene	BDL	µg/kg dry wt	11/13/98	HL		10
trans-1,3-Dichloropropene	BDL	µg/kg dry wt	11/13/98	HL		10
Diethyl Ether	BDL	µg/kg dry wt	11/13/98	HL		100
Ethylbenzene	BDL	µg/kg dry wt	11/13/98	HL		10
Hexachloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
2-Hexanone	BDL	µg/kg dry wt	11/13/98	HL		50
Isopropylbenzene	BDL	µg/kg dry wt	11/13/98	HL		10
hylene Chloride	BDL	µg/kg dry wt	11/13/98	HL		50
hyl Iodide	BDL	µg/kg dry wt	11/13/98	HL		10
2-Methylnaphthalene	BDL	µg/kg dry wt	11/13/98	HL		50
4-Methyl-2-Pentanone	BDL	µg/kg dry wt	11/13/98	HL		50
Methyl Tertiary Butyl Ether	BDL	µg/kg dry wt	11/13/98	HL		50
Naphthalene	BDL	µg/kg dry wt	11/13/98	HL		50
2-Propanone	BDL	µg/kg dry wt	11/13/98	HL		250
n-Propylbenzene	BDL	µg/kg dry wt	11/13/98	HL		10
Styrene	BDL	µg/kg dry wt	11/13/98	HL		10
1,1,1,2-Tetrachloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,1,2,2-Tetrachloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
Tetrachloroethene	BDL	µg/kg dry wt	11/13/98	HL		10
Toluene	BDL	µg/kg dry wt	11/13/98	HL		10
1,1,1-Trichloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2,4-Trichlorobenzene	BDL	µg/kg dry wt	11/13/98	HL		50
1,1,2-Trichloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
Trichloroethene	BDL	µg/kg dry wt	11/13/98	HL		10
Trichlorofluoromethane	BDL	µg/kg dry wt	11/13/98	HL		50
1,2,3-Trichloropropane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2,4-Trimethylbenzene	BDL	µg/kg dry wt	11/13/98	HL		10
1,3,5-Trimethylbenzene	BDL	µg/kg dry wt	11/13/98	HL		10
Vinyl acetate	BDL	µg/kg dry wt	11/13/98	HL		10
Vinyl chloride	BDL	µg/kg dry wt	11/13/98	HL		50
o-Xylene	BDL	µg/kg dry wt	11/13/98	HL		10
m-Xylene & p-Xylene	BDL	µg/kg dry wt	11/13/98	HL		20

BDL = Below Detection Limit
MDL = Method Detection Limit

Sample ID: Sample 06 Lab ID: 9811168-02 Collected: 11/12/98

T	RESULT	UNITS	ANALYZED	BY	METHOD	MDL
Total Solids	90.2	% of sample	11/16/98	JA	APHA 2540 B.	N/A
Arsenic	1.5	mg/kg dry wt.	11/14/98	JA	EPA 7060	0.048
Barium	5.4	mg/kg dry wt.	11/16/98	MBR	EPA 6010	0.24
Chromium	2.6	mg/kg dry wt.	11/16/98	MBR	EPA 6010	0.24
Lead	3.6	mg/kg dry wt.	11/16/98	MBR	EPA 6010	2.4
Metals Prep, Solid	11/14/98	date digested		JA	EPA 3050	
Thallium	BDL	mg/kg dry wt.	11/16/98	JA	EPA 7841	0.048
Vanadium	3.8	mg/kg dry wt.	11/16/98	MBR	EPA 6010	0.48
Zinc	9.8	mg/kg dry wt.	11/16/98	MBR	EPA 6010	0.48
4-Methylphenol	BDL	µg/kg dry wt	11/17/98	HL	EPA 8270	25
Acid/Permanganate Cleanup	11/16/98	date completed		DGK	EPA 3665	
Florisil Cleanup	11/16/98	date completed		DGK	EPA 3620	
Phenol	BDL	µg/kg dry wt	11/17/98	HL	EPA 8270	25
Polychlorinated Biphenyls					EPA 8082	
PCB-1016	BDL	µg/kg dry wt	11/16/98	DGK		27
PCB-1221	BDL	µg/kg dry wt	11/16/98	DGK		27
PCB-1232	BDL	µg/kg dry wt	11/16/98	DGK		27
PCB-1242	BDL	µg/kg dry wt	11/16/98	DGK		27
PCB-1248	BDL	µg/kg dry wt	11/16/98	DGK		27
PCB-1254	BDL	µg/kg dry wt	11/16/98	DGK		27
PCB-1260	BDL	µg/kg dry wt	11/16/98	DGK		27
Total PCBs	BDL	µg/kg dry wt	11/16/98	DGK		140
Silica Gel Cleanup	11/16/98	date completed		DGK	EPA 3630	
Soxhlet Ext. for PCBs	11/13/98	prep. date		DGK	EPA 3540	
Soxhlet Extraction for BNA	11/13/98	prep. date		DGK	EPA 3540	
Sulfur Cleanup	11/16/98	date completed		DGK	EPA 3660	
Volatile Organic Compounds					EPA 8260	
Acrylonitrile	BDL	µg/kg dry wt	11/13/98	HL		50
nzene	BDL	µg/kg dry wt	11/13/98	HL		10
omochloromethane	BDL	µg/kg dry wt	11/13/98	HL		10
Bromodichloromethane	BDL	µg/kg dry wt	11/13/98	HL		10
Bromoform	BDL	µg/kg dry wt	11/13/98	HL		10
Bromomethane	BDL	µg/kg dry wt	11/13/98	HL		50
2-Butanone	BDL	µg/kg dry wt	11/13/98	HL		50
Carbon Disulfide	BDL	µg/kg dry wt	11/13/98	HL		50
Carbon tetrachloride	BDL	µg/kg dry wt	11/13/98	HL		10
Chlorobenzene	BDL	µg/kg dry wt	11/13/98	HL		10
Chloroethane	BDL	µg/kg dry wt	11/13/98	HL		50
Chloroform	BDL	µg/kg dry wt	11/13/98	HL		10
Chloromethane	BDL	µg/kg dry wt	11/13/98	HL		50
Dibromochloromethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2-Dibromo-3-chloropropane	BDL	µg/kg dry wt	11/13/98	HL		50
Dibromomethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2-Dibromoethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2-Dichlorobenzene	BDL	µg/kg dry wt	11/13/98	HL		10
1,3-Dichlorobenzene	BDL	µg/kg dry wt	11/13/98	HL		10
1,4-Dichlorobenzene	BDL	µg/kg dry wt	11/13/98	HL		10
Trans-1,4-dichloro-2-butene	BDL	µg/kg dry wt	11/13/98	HL		10
Dichlorodifluoromethane	BDL	µg/kg dry wt	11/13/98	HL		50
1,1-Dichloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2-Dichloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,1-Dichloroethene	BDL	µg/kg dry wt	11/13/98	HL		10
cis-1,2-Dichloroethene	BDL	µg/kg dry wt	11/13/98	HL		10
trans-1,2-Dichloroethene	BDL	µg/kg dry wt	11/13/98	HL		10
1,2-Dichloropropane	BDL	µg/kg dry wt	11/13/98	HL		10
cis-1,3-Dichloropropene	BDL	µg/kg dry wt	11/13/98	HL		10
trans-1,3-Dichloropropene	BDL	µg/kg dry wt	11/13/98	HL		10
Diethyl Ether	BDL	µg/kg dry wt	11/13/98	HL		100

BDL = Below Detection Limit
MDL = Method Detection Limit

Sample ID: Sample 06 Lab ID: 9811168-02 Collected: 11/12/98

ST	RESULT	UNITS	ANALYZED	BY	METHOD	MDL
Volatile Organic Compounds					EPA 8260	
Ethylbenzene	BDL	µg/kg dry wt	11/13/98	HL		10
Hexachloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
2-Hexanone	BDL	µg/kg dry wt	11/13/98	HL		50
Isopropylbenzene	BDL	µg/kg dry wt	11/13/98	HL		10
Methylene Chloride	BDL	µg/kg dry wt	11/13/98	HL		50
Methyl Iodide	BDL	µg/kg dry wt	11/13/98	HL		10
2-Methylnaphthalene	BDL	µg/kg dry wt	11/13/98	HL		50
4-Methyl-2-Pentanone	BDL	µg/kg dry wt	11/13/98	HL		50
Methyl Tertiary Butyl Ether	BDL	µg/kg dry wt	11/13/98	HL		50
Naphthalene	BDL	µg/kg dry wt	11/13/98	HL		50
2-Propanone	BDL	µg/kg dry wt	11/13/98	HL		250
n-Propylbenzene	BDL	µg/kg dry wt	11/13/98	HL		10
Styrene	BDL	µg/kg dry wt	11/13/98	HL		10
1,1,1,2-Tetrachloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,1,2,2-Tetrachloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
Tetrachloroethene	BDL	µg/kg dry wt	11/13/98	HL		10
Toluene	BDL	µg/kg dry wt	11/13/98	HL		10
1,1,1-Trichloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2,4-Trichlorobenzene	BDL	µg/kg dry wt	11/13/98	HL		50
1,1,2-Trichloroethane	BDL	µg/kg dry wt	11/13/98	HL		10
Trichloroethene	BDL	µg/kg dry wt	11/13/98	HL		10
Trichlorofluoromethane	BDL	µg/kg dry wt	11/13/98	HL		50
1,2,3-Trichloropropane	BDL	µg/kg dry wt	11/13/98	HL		10
1,2,4-Trimethylbenzene	BDL	µg/kg dry wt	11/13/98	HL		10
1,3,5-Trimethylbenzene	BDL	µg/kg dry wt	11/13/98	HL		10
Vinyl acetate	BDL	µg/kg dry wt	11/13/98	HL		10
Vinyl chloride	BDL	µg/kg dry wt	11/13/98	HL		50
Xylene	BDL	µg/kg dry wt	11/13/98	HL		10
m-Xylene & p-Xylene	BDL	µg/kg dry wt	11/13/98	HL		20

BDL = Below Detection Limit
MDL = Method Detection Limit

Taplin Environmental Contracting
5100 W. Michigan Avenue
Kalamazoo, MI 49006
616-375-9595

CHAIN-OF-CUSTODY RECORD

CHAIN-OF-CUSTODY Nº CH L 64

RECEIVING ENTITY Western Michigan Env.

PROJECT MANAGER Steve Taplin

ENTITY CONTACT/PHONE 616 399 6070

TAPLIN SITE PHONE 616 226 0231

Name of Client: RMT, Inc.

Project Name, City, State: Georgia-Pacific King Highway Landfill

Parameters: BTEX*, TPH**, PNA***, FLASH POINT

Project # 21864-R

P.O. # 4354

Transfer # 1 2 3 4

Item Number	Date	Time	Sample Number	Number & Size of Containers	Description
1	11/12/98	8:43 AM	05	(1) 16 oz.	Class II fill Rousch Site
2	11/12/98	8:43 AM	06	(1) 16 oz.	Class II fill Rousch Site
					See Attached

Trans. #	Item #	Samples Relinquished By	Accepted By	Date	Time
1	1		P.J. Wilson WMSU	11/13/98	0955
2	2				
3					
4					

TOTALS

FAX results to: 616-375-2830

Send hard copy & QA/QC data results to Pat Taplin at Terra

Person Responsible for Samples	Affiliation	Date	Time	Special Instructions (use back of form if necessary - attach photocopies to other pages)

REVISED 4-2-90

* BTEX Benzene, Toluene, Ethyl Benzene, Xylene; ** TPH Total Petroleum Hydrocarbons; *** PNA Poly Nuclear Aromatics

SUBMITTAL No. 5A

REVIEWED ☐ REVIEWED & NOTED ☒
REVIEWED SOLEY FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS
BLASLAND, BOUCK & LEE, INC.
W. A. Rankin III
SIGNATURE
11/19/98 Date
Syr. Office Location
RESUBMIT ☐ REJECTED ☐

November 11, 1998

Mr. Bill Rankin
Project Engineer
Blasland Bouck & Lee
6723 Towpath Road
Syracuse, NY 13214

Subject: Topsoil
King Highway Landfill
Georgia-Pacific Corporation
Kalamazoo, Michigan

Dear Bill:

RMT, Inc, Michigan (RMT) has reviewed the laboratory data on the topsoil supplied by Taplin Environmental Contracting (Taplin) for use in stabilizing Cell 4 at the King Highway Landfill. Two samples of the material were collected and submitted to a testing laboratory for chemical analysis. Prior to the sampling event, it was agreed by RMT and Blasland Bouck & Lee that two rounds of sampling would be conducted on each of the proposed borrow sources for the list of parameters identified by the Michigan Department of Environmental Quality in BB&L's letter dated October 7, 1998, as potential constituents of concern.

In reviewing the results of the two rounds of sampling, the VOCs (including acteone and naphthalene), PCBs, phenol, and 4-methylphenol were all below detection limits; metals were detected at levels less that the State of Michigan's Soil Residential and Commercial 1 direct contact cleanup criteria and in many instances were less than the state's generic background levels. After reviewing this information, it is our opinion that the supplied material is acceptable for its intended use and is in general conformance with the overall intent of the project design and specifications.

Please submit Data/Information a

Sincerely,

RMT, Inc., Michigan

Sharon L. Bailey, P.E.
Senior Project Manager

Attachments:

cc: Paul Montney, Georgia-Pacific

RMT, INC., MICHIGAN
1143 HIGHLAND DRIVE, SUITE B - 48108-2237
P.O. BOX 991 - 48106-0991
ANN ARBOR, MI
734/971-7080 - 734/971-9022 FAX

WESTERN MICHIGAN
ENVIRONMENTAL SERVICES, INC.
Analytical Laboratory and Testing Services

3352 128th Avenue, Holland, Michigan 49424-9263
Phone: 616-399-6070 FAX: 616-399-6185
E-mail: info@wmesi.com
Internet: http://www.wmesi.com

LENT: Taplin Environmental Cont
5100 West Michigan Avenue
Kalamazoo, MI 49006

Attn: Steve Taplin
Re: RMT: G-P (King Highway LF)

TE: October 9, 1998

ALYSIS OF: Soil Sample

PORTED BY: Robert K. Bahrych, Laboratory Manager

TE RECEIVED: Received from client on September 29, 1998.

mple ID: 001 -- Processed Topsoil Lab ID: 9809315-01 Collected: 09/28/98

TEST	RESULT	UNITS	ANALYZED	BY	METHOD	MDL
[redacted]olids	87.6	% of sample	10/07/98	JA	APHA 2540 B.	N/A
	5.5	mg/kg dry wt.	10/06/98	JA	EPA 7060	0.23
Barium	87	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.12
hromium	5.2	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.12
ead	6.6	mg/kg dry wt.	10/06/98	JA	EPA 6010	1.2
etals Prep, Solid	10/06/98	date digested		JA	EPA 3050	
hallium	BDL	mg/kg dry wt.	10/07/98	JA	EPA 7841	0.023
anadium	9.9	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.23
inc	22	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.23
-Methylphenol	BDL	µg/kg dry wt	10/09/98	DAH	EPA 8270	330
Acid/Permanganate Cleanup	10/07/98	date completed		DGK	EPA 3665	
florisil Cleanup	10/07/98	date completed		DGK	EPA 3620	
henol	BDL	µg/kg dry wt	10/09/98	DAH	EPA 8270	330
olychlorinated Biphenyls					EPA 8082	
PCB-1016	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1221	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1232	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1242	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1248	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1254	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1260	BDL	µg/kg dry wt	10/07/98	DGK		330
Total PCBs	BDL	µg/kg dry wt	10/07/98	DGK		1,700
Silica Gel Cleanup	10/07/98	date completed		DGK	EPA 3630	
Soxhlet Ext. for PCBs	10/06/98	prep. date		DGK	EPA 3540	
Soxhlet Extraction for BNA	10/06/98	prep. date		HL	EPA 3540	
Sulfur Cleanup	10/07/98	date completed		DGK	EPA 3660	
Volatile Organic Compounds					EPA 8260	
Acrylonitrile	BDL	µg/kg dry wt	10/09/98	DAH		10
Benzene	BDL	µg/kg dry wt	10/09/98	DAH		10
Bromodichloromethane	BDL	µg/kg dry wt	10/09/98	DAH		10
Bromochloromethane	BDL	µg/kg dry wt	10/09/98	DAH		10
[redacted]oform	BDL	µg/kg dry wt	10/09/98	DAH		10
[redacted]omethane	BDL	µg/kg dry wt	10/09/98	DAH		10
2-Butanone	BDL	µg/kg dry wt	10/09/98	DAH		50
Carbon Disulfide	BDL	µg/kg dry wt	10/09/98	DAH		50
Carbon Tetrachloride	BDL	µg/kg dry wt	10/09/98	DAH		10
Chlorobenzene	BDL	µg/kg dry wt	10/09/98	DAH		10
Chloroethane	BDL	µg/kg dry wt	10/09/98	DAH		10

WESTERN MICHIGAN ENVIRONMENTAL SERVICES, INC.

mple ID: 001 -- Processed Topsoil Lab ID: 9809315-01 Collected: 09/28/98

ast	RESULT	UNITS	ANALYSED	BY	METHOD	MDL
olatile Organic Compounds					EPA 8260	
Chloroform	BDL	µg/kg dry wt	10/09/98	DAH		10
Chloromethane	BDL	µg/kg dry wt	10/09/98	DAH		10
Dibromochloromethane	BDL	µg/kg dry wt	10/09/98	DAH		10
1,2-Dibromo-3-chloropropane	BDL	µg/kg dry wt	10/09/98	DAH		10
Dibromomethane	BDL	µg/kg dry wt	10/09/98	DAH		10
1,2-Dibromoethane	BDL	µg/kg dry wt	10/09/98	DAH		10
1,2-Dichlorobenzene	BDL	µg/kg dry wt	10/09/98	DAH		10
1,3-Dichlorobenzene	BDL	µg/kg dry wt	10/09/98	DAH		10
1,4-Dichlorobenzene	BDL	µg/kg dry wt	10/09/98	DAH		10
Trans-1,4-dichloro-2-butene	BDL	µg/kg dry wt	10/09/98	DAH		10
Dichlorodifluoromethane	BDL	µg/kg dry wt	10/09/98	DAH		10
1,1-Dichloroethane	BDL	µg/kg dry wt	10/09/98	DAH		10
1,2-Dichloroethane	BDL	µg/kg dry wt	10/09/98	DAH		10
1,1-Dichloroethene	BDL	µg/kg dry wt	10/09/98	DAH		10
cis-1,2-Dichloroethene	BDL	µg/kg dry wt	10/09/98	DAH		10
trans-1,2-Dichloroethene	BDL	µg/kg dry wt	10/09/98	DAH		10
1,2-Dichloropropane	BDL	µg/kg dry wt	10/09/98	DAH		10
cis-1,3-Dichloropropene	BDL	µg/kg dry wt	10/09/98	DAH		10
trans-1,3-Dichloropropene	BDL	µg/kg dry wt	10/09/98	DAH		10
Diethyl Ether	BDL	µg/kg dry wt	10/09/98	DAH		50
Ethylbenzene	BDL	µg/kg dry wt	10/09/98	DAH		10
Hexachloroethane	BDL	µg/kg dry wt	10/09/98	DAH		10
2-Hexanone	BDL	µg/kg dry wt	10/09/98	DAH		50
Isopropylbenzene	BDL	µg/kg dry wt	10/09/98	DAH		10
Methylene Chloride	BDL	µg/kg dry wt	10/09/98	DAH		250
Methyl Iodide	BDL	µg/kg dry wt	10/09/98	DAH		10
2-Methylnaphthalene	BDL	µg/kg dry wt	10/09/98	DAH		10
4-Methyl-2-Pentanone	BDL	µg/kg dry wt	10/09/98	DAH		50
Methyl Tertiary Butyl Ether	BDL	µg/kg dry wt	10/09/98	DAH		50
Naphthalene	BDL	µg/kg dry wt	10/09/98	DAH		10
2-Propanone	BDL	µg/kg dry wt	10/09/98	DAH		250
n-Propylbenzene	BDL	µg/kg dry wt	10/09/98	DAH		10
Styrene	BDL	µg/kg dry wt	10/09/98	DAH		10
1,1,1,2-Tetrachloroethane	BDL	µg/kg dry wt	10/09/98	DAH		10
1,1,2,2-Tetrachloroethane	BDL	µg/kg dry wt	10/09/98	DAH		10
Tetrachloroethene	BDL	µg/kg dry wt	10/09/98	DAH		10
Toluene	BDL	µg/kg dry wt	10/09/98	DAH		10
1,1,1-Trichloroethane	BDL	µg/kg dry wt	10/09/98	DAH		10
1,2,4-Trichlorobenzene	BDL	µg/kg dry wt	10/09/98	DAH		10
1,1,2-Trichloroethane	BDL	µg/kg dry wt	10/09/98	DAH		10
Trichloroethene	BDL	µg/kg dry wt	10/09/98	DAH		10
Trichlorofluoromethane	BDL	µg/kg dry wt	10/09/98	DAH		10
1,2,3-Trichloropropane	BDL	µg/kg dry wt	10/09/98	DAH		10
1,2,4-Trimethylbenzene	BDL	µg/kg dry wt	10/09/98	DAH		10
1,3,5-Trimethylbenzene	BDL	µg/kg dry wt	10/09/98	DAH		10
Vinyl acetate	BDL	µg/kg dry wt	10/09/98	DAH		10
Vinyl chloride	BDL	µg/kg dry wt	10/09/98	DAH		10
o-Xylene	BDL	µg/kg dry wt	10/09/98	DAH		10
m-Xylene & p-Xylene	BDL	µg/kg dry wt	10/09/98	DAH		10

NOTE: Sample was collected in bulk.

WESTERN MICHIGAN
ENVIRONMENTAL SERVICES, INC.
Analytical Laboratory and Testing Services

3352 128th Avenue, Holland, Michigan 49424-9263
Phone: 616-399-6070 FAX: 616-399-6185
E-mail: info@wmesi.com
Internet: http://www.wmesi.com

CLIENT: Taplin Environmental Cont
5100 West Michigan Avenue
Kalamazoo, MI 49006

Attn: Steve Taplin
Re: Proj: Q-F (King Highway LF)

DATE: October 9, 1998

ANALYSIS OF: Soil Sample

REPORTED BY: Robert K. Zahray, Laboratory Manager

DATE RECEIVED: Received from client on September 30, 1998.

Sample ID: 002 -- Processed Topsoil Lab ID: 9809323-01 Collected: 09/29/98

TEST	RESULT	UNITS	ANALYSED	BY	METHOD	MDL
Solids	96.4	% of sample	10/07/98	JA	APHA 2540 B.	N/A
Arsenic	4.9	mg/kg dry wt.	10/07/98	JA	EPA 7060	0.25
Barium	BDL	mg/kg dry wt.	10/06/98	JA	EPA 6010	0.13
Chromium	5.6	mg/kg dry wt.	10/07/98	JA	EPA 6010	0.13
Lead	6.8	mg/kg dry wt.	10/07/98	JA	EPA 6010	1.3
Metals Prep, Solid	10/06/98	date digested		JA	EPA 3050	
Thallium	BDL	mg/kg dry wt.	10/07/98	JA	EPA 7841	0.025
Vanadium	11	mg/kg dry wt.	10/07/98	JA	EPA 6010	0.25
Zinc	22	mg/kg dry wt.	10/07/98	JA	EPA 6010	0.25
4-Methylphenol	BDL	µg/kg dry wt	10/07/98	DAH	EPA 8270	330
Acid/Permanganate Cleanup	10/07/98	date completed		DGK	EPA 3665	
Florisil Cleanup	10/07/98	date completed		DGK	EPA 3620	
Phenol	BDL	µg/kg dry wt	10/07/98	DAH	EPA 8270	330
Polychlorinated Biphenyls					EPA 8082	
PCB-1016	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1221	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1232	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1242	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1248	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1254	BDL	µg/kg dry wt	10/07/98	DGK		330
PCB-1260	BDL	µg/kg dry wt	10/07/98	DGK		330
Total PCBs	BDL	µg/kg dry wt	10/07/98	DGK		330
Silica Gel Cleanup	10/07/98	date completed		DGK	EPA 3630	1,700
Soxhlet Ext. for PCBs	10/06/98	prep. date		DGK	EPA 3540	
Soxhlet Extraction for BNA	10/06/98	prep. date		HL	EPA 3540	
Sulfur Cleanup	10/07/98	date completed		DGK	EPA 3660	
Volatile Organic Compounds					EPA 8260	
Acrylonitrile	BDL	µg/kg dry wt	10/07/98	DAH		1(
Benzene	BDL	µg/kg dry wt	10/07/98	DAH		1(
Bromochloromethane	BDL	µg/kg dry wt	10/07/98	DAH		1(
Bromodichloromethane	BDL	µg/kg dry wt	10/07/98	DAH		1(
Bromoform	BDL	µg/kg dry wt	10/07/98	DAH		1(
Bromomethane	BDL	µg/kg dry wt	10/07/98	DAH		1(
2-Butanone	BDL	µg/kg dry wt	10/07/98	DAH		1(
Carbon Disulfide	BDL	µg/kg dry wt	10/07/98	DAH		5
Carbon Tetrachloride	BDL	µg/kg dry wt	10/07/98	DAH		5
Chlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		1
Chloroethane	BDL	µg/kg dry wt	10/07/98	DAH		1
	BDL	µg/kg dry wt	10/07/98	DAH		1

STERN MICHIGAN ENVIRONMENTAL SERVICES, INC.

[redacted]: 002 -- Processed Topsoil Lab ID: 9809323-01 Collected: 09/29/98

T	RESULT	UNITS	ANALYSED	BY	METHOD	MDL
atile Organic Compounds					EPA 8260	
loroform	BDL	µg/kg dry wt	10/07/98	DAH		10
loromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
bromochloromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
2-Dibromo-3-chloropropane	BDL	µg/kg dry wt	10/07/98	DAH		10
bromomethane	BDL	µg/kg dry wt	10/07/98	DAH		10
,2-Dibromoethane	BDL	µg/kg dry wt	10/07/98	DAH		10
,2-Dichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
,3-Dichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
,4-Dichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
rans-1,4-dichloro-2-butene	BDL	µg/kg dry wt	10/07/98	DAH		10
ichlorodifluoromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
,1-Dichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
,2-Dichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
,1-Dichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
is-1,2-Dichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
rans-1,2-Dichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
,2-Dichloropropane	BDL	µg/kg dry wt	10/07/98	DAH		10
is-1,3-Dichloropropene	BDL	µg/kg dry wt	10/07/98	DAH		10
rans-1,3-Dichloropropene	BDL	µg/kg dry wt	10/07/98	DAH		10
iethyl Ether	BDL	µg/kg dry wt	10/07/98	DAH		50
thylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
exachloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
-Hexanone	BDL	µg/kg dry wt	10/07/98	DAH		50
Isopropylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
ethylene Chloride	BDL	µg/kg dry wt	10/07/98	DAH		250
[redacted] Iodide	BDL	µg/kg dry wt	10/07/98	DAH		10
[redacted]ylnaphthalene	BDL	µg/kg dry wt	10/07/98	DAH		10
4-Methyl-2-Pentanone	BDL	µg/kg dry wt	10/07/98	DAH		50
Methyl Tertiary Butyl Ether	BDL	µg/kg dry wt	10/07/98	DAH		50
Naphthalene	BDL	µg/kg dry wt	10/07/98	DAH		10
2-Propanone	BDL	µg/kg dry wt	10/07/98	DAH		250
n-Propylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Styrene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,1,2-Tetrachloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,2,2-Tetrachloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Tetrachloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
Toluene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,1-Trichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2,4-Trichlorobenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,1,2-Trichloroethane	BDL	µg/kg dry wt	10/07/98	DAH		10
Trichloroethene	BDL	µg/kg dry wt	10/07/98	DAH		10
Trichlorofluoromethane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2,3-Trichloropropane	BDL	µg/kg dry wt	10/07/98	DAH		10
1,2,4-Trimethylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
1,3,5-Trimethylbenzene	BDL	µg/kg dry wt	10/07/98	DAH		10
Vinyl acetate	BDL	µg/kg dry wt	10/07/98	DAH		10
Vinyl chloride	BDL	µg/kg dry wt	10/07/98	DAH		10
o-Xylene	BDL	µg/kg dry wt	10/07/98	DAH		10
m-Xylene & p-xylene	BDL	µg/kg dry wt	10/07/98	DAH		10

NOTE: Sample was collected in bulk.

BDL = Below Detection Limits

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